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Fall 2006

Urban Agriculture: A Literature Review

Urban Agriculture: Differing Phenomena in Differing Regions of the World



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A review of the academic literature and research that focus on the global phenomena of crop cultivation, livestock propagation and food product distribution in the urban context.

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Course: LAST - 795
Urban Latin America

Published by: Alternative Farming Systems Information Center
National Agricultural Library
Beltsville, Maryland

Table of Contents

1	Introduction	5
2	Methodology	6
3	Basic Library in Urban Agriculture.....	8
	A 1996 UNDP Report.....	8
	B 15 Works of Recommended Reading.....	9
4	Review of the Literature on the Subject of Urban Agriculture	
	A The Centrality of the 1996 UNDP Report to Research in Urban Agriculture.....	10
	1 Introduction to the 1996 UNDP Report	11
	2 Table of Contents of the 1996 UNDP Report	11
	3 General Characteristics: Past and Current Urban Agriculture	12
	B Review of Literature on Regional Manifestations of Urban Agriculture.....	14
	1 Asia.....	14
	2 Africa.....	16
	3 Latin America	18
	4 Europe.....	21
	5 North America	24
	C Review of Literature on the General Characteristics of Urban Agriculture.....	26
	1 Who Are Urban Farmers?.....	29
	2 Where and What is Farmed?.....	30
	3 Producing Food and Fuel in Urban Areas.....	31
	4 Organizations Involved in Urban Agriculture.....	32
	5 Benefits, Problems, Constraints and the Future of Urban Agriculture.....	34
	D Web Resources on Urban Agriculture.....	36
5	Other Considerations on Research in Urban Agriculture	42
	A Where is Urban Agriculture found in Academic Curriculums.....	42
	B Literature Found Outside of Academic Urban Agriculture.....	46
	C Urban Agriculture and Urban Design	52
	D Shortcomings of Research in Urban Agriculture	59
6	The Particular Case of Latin America	64
7	Summary	67
8	Appendices	73

Introduction

The first thing that an academic analysis of urban agriculture reveals is that the practice has both chameleon and Phoenix-like characteristics. It adapts and modifies itself to the environment and demography where it finds a social or economic imperative and it rises periodically, out of necessity, from the refuse and ashes of civilization's suppression of viable life in overburdened dense centers of our cultures - their cities. Urban agriculture is at times the reflexive response for survival of people with few options, and at other times the thoughtful long-term organization of resources to moderate the harshness of the urban environment. Urban agriculture has almost as many definitions as locations.

Urban agriculture will be considered here as any processes that produce traditional subsistence, nutritional or commercially profitable food or other grown or raised products, removed from rural domains, and instead cultivate them in special intensive conditions within the urban context or in its surrounding buffer, peri-urban, regions. This paper is the culmination of a study assessing the scope and status of current and past academic documentation of the phenomenon known as urban agriculture. It will loosely follow the form of a literature review of the accessible body of works relating to this subject. It will also try to define aspects of this activity that have escaped formal documentation and identify possible interpretations and perspectives of these activities that appear to be under-represented in the formal literature.

It should be noted that the breadth and depth of research on the subject of urban agriculture are far greater than thought by the researcher at the inception of the project. Activity is extensive across many academic disciplines and has existed since long before the general term urban agriculture was applied to this activity. The results of journal and book searches were limited as many articles or titles in the field do not contain keywords such as urban or city and/or agriculture, gardening or farming. The fact that there is no single discipline in which to look for titles or abstracts, results in the missing of research that, although not obvious, still is relevant even if tangentially, to the core interest. Summarizing interest in this activity requires casting a wide and flexible net that includes traditional academic and non-

academic sources. It was found that although the initial goal was to assess the scope and status of academic documentation, it was determined that a substantial amount of relevant information exists outside of academic literature. These sources will be reviewed and accessed where appropriate to provide as comprehensive an analysis as possible. The process is further confused because searching two of the disciplines that might intuitively have been starting places: agriculture and urban planning, turns up very little of the central research on urban agriculture. Providently, interested organizations are compiling and annotating extensive bibliographies, across disciplines, in the field of urban agriculture. This work will be of great use to future researchers and will be discussed in the literature review.

The purpose of this literature review is to determine what activities fall under the purvey of academic study in urban agriculture, the nature of the literature of this activity, the researchers doing the documentation and any aspects which, by omission, are in need of more focused research. The literature review reveals quickly that there are clear differences in the perception of urban agriculture in various regions of the world. The nature and possible causes of these differences are not basically agricultural or geographic, but rooted in social, economic and cultural variations in the urban centers and the surrounding development. Thus, the study of urban agriculture is analyzing differing activities and asking differing questions in Asia than in Africa, than in South and North America, than in Europe. There is a great degree of overlap in themes, but the texture of urban agriculture is different in each region. It is seen that researchers tend to specialize in one region rather than analyzing one aspect of urban agriculture across all regions.

The limitations in the focus of past research will need to be addressed as the study of urban agriculture moves towards a unified discipline. Possible ways to organize the research into the aspects of urban agriculture that do transcend regional incidence will be discussed in this review. How urban agriculture can enter the vocabulary of urban planners and designers will be investigated. Insight will be gained by reflecting on the nature and direction of the research available currently.

This literature review is being carried out under the auspices of the Latin American Studies Program of the Stone Center of Tulane University in New Orleans, Louisiana. In the final analysis, an attempt will be made to quantify and discuss the state of research on urban agriculture in Latin America, how it differs from the activities in other regions and what can be learned from the work in other regions that might be of benefit to both practitioners and researchers of activities in Latin America.

Methodology

The initial direction of inquiry for this research was provided by responses to an email request sent out by Prof. Timmons Roberts of the Tulane University Department of Sociology and this researcher. Questions about the current status of research in urban agriculture had arisen during his Tulane University graduate seminar course: SOCI - 652, Restructuring Environmental Struggles in Latin America in the fall of 1999. A query was made to geographic and sociology list-servers in which Prof. Roberts was a participant. Some responses led to articles, some to areas of current and past activity. These people were contacted again after some background work had been gained through library research.

The library search for subject literature began in the Spring of 2000 with a journal and title search using the keywords: urban ?, cit ?, "and" agric ?, farm ?. This yielded an initial list of about 50 relevant works that were sought in the local catalogues and through inter-library loan. A little more than half of these were received in hand. The bibliographies of these articles were mined for articles and books relevant to Urban Agriculture and authors working in both core and tangential areas. The most promising articles were sought through inter-library loan. A running bibliography, divided into geographic regions, was begun and a series of emails and postal mailings were sent out to both the original email respondents and all relevant researchers for whom address or email could be found. The request, a copy of which is found in the appendix, introduced

my area of inquiry and myself, and contained a bibliography of what we had already reviewed.

The responses to this second round of inquiries were very helpful. They included direction to a website, City Farmer, which had been visited in primary research, but upon revisiting found to be much more extensive and able to link to numerous sources. Also in response was a researcher prominent in the field, Jac Smit, who was actively compiling a bibliography on urban agriculture, and proposed an exchange of work. This exchange resulted in 33 pages of sources being received and 6 pages of sources being delivered to him.¹

A local city gardener, Tracy Hamlin, was interviewed. She was a founding director of the Mid-City Green Project and its Co-op garden program. She also ran an intensive gardening program for the lower grades at Ursuline Academy in New Orleans that teaches the process of intensive farming and has the students deliver their produce to the Ozanam Inn, a mission in the CBD of New Orleans. For this effort she gained national recognition as Parent of the Month by Parenting Magazine, and has been nominated in a number of categories for Burpee-Seed sponsored national recognition. Ms. Hamlin is a local asset and an actualization of why urban agriculture cannot be pigeonholed as a developing world activity. Newspaper article and magazine coverage of her story is reviewed in the section on research found outside of academic urban agriculture literature.

Another contact not found during keyword and discipline searches was David Clawson, Professor of Geography at Louisiana University at New Orleans, (UNO). During research visiting and discussing the gardening efforts of the Eastern New Orleans' Vietnamese community, it was revealed that Prof. Clawson had documented this local activity. An article in the local newspaper was found and this led to his academic research. Joining what is apparently a small but growing segment of work in the field of urban agriculture, Prof. Clawson included discussion of the cultural aspects of the activity. Prof. Clawson is also the Director of the UNO Latin American Studies Program and expressed

¹ A list of Selected Bibliographical References from work unearthed during research will be included in Appendix 3

interest during correspondence in researching Hispanic gardening activity in the New Orleans metro area. The cultural nature of Prof. Clawsen's line of inquiry in southern

Louisiana raises interesting questions when applied to the general body of urban agriculture research in other geographic regions, as often these cultural motivations and influences have not been taken into consideration or documented by those working in the field. His articles will be reviewed in the section on Who are the Urban Farmers. Prof. Clawsen's field of work could be described as Cultural Geography and is an academic area that would not intuitively be pursued for urban agriculture studies.

The end of 2000 found this research with a wide-ranging aggregation of material being compiled, and a satisfying percentage having been obtained and reviewed. Organizations actively structuring and promoting this phenomenon had been identified and the broad umbrella of activities that might be covered by research in the field had been substantially defined.

A sense of having comprehensively surveyed the field was lacking for two reasons. First, many significant authors or researchers in the field seemed to have no knowledge of, or contact with other areas of research that might have considerable relevance to the broader properties of their areas of interest. Second, the frequent and serendipitous discoveries of pockets of activity which fall under the umbrella of urban agriculture, but are either undocumented or not placed in the context of the general phenomena of urban agriculture. These observations led the researcher to feel that literature had been undiscovered at the extremes of the research spectrum: large overview of secondary themes beyond the basic farming activities; and small pockets of diversified individual actualization. A three-year period of incubation followed where the rewards of previous enquire and persistent entreaties were allowed to filter in from a network of formal and tangential contacts. This time period greatly expanded the knowledge at the small, nodal end of the spectrum, and coincided with the growth of the Internet, which allowed for development of institutional websites promoting an accessible overview of the subject. The tangential nodes of activity discovered have been reviewed for their relevance to the whole field and discussion of each

is placed in the related subcategory of this literature review. An example would be an article on grass as an urban roofing material, which is reviewed in the section on research found outside of the academic urban agriculture. The search for further research supplying alternative theme overviews and the relationship between various aspects of urban agriculture was answered in part by newly discovered literature, but more substantially by the improved organization and documentation of research in the field by a number of web entities. This structural improvement in the organization of research in this field will be addressed in the chapter on Web Resources. There was news of one new work on the future horizon that will update the overall status of urban agriculture. This work-in-progress, an update of the 1996 UNDP Report on Urban Agriculture will be discussed in the Web Resources chapter. Traditional journal and abstract searches and web research were updated in the spring of 2006 with the purpose of bringing the initial efforts up-to-date and incorporating all of the literature review into one comprehensive effort.

Even though this work is a literature review, the three years of incubation allowed this researcher to develop a broader understanding of the activities of urban agriculture. Three trips were made to Cuba, occurring in the springs of 2001, 02 and 03, with the Preservation Architecture Program of Tulane University. First-hand observation and photo documentation of various levels of Cuban formal and informal urban agriculture activities was enabled across the island. This time period also made the researcher aware of the preservationist nature of urban agriculture. In some instances these activities preserve a culture, lifestyle or scale of urban living that has existed over time. An example of literature describing this aspect was an article in Preservation magazine by Charles Wilson that is reviewed in the North American regional literature survey. Preservation Architecture studies also raised the issue of urban agriculture as a part of an urban planning process. Following this aspect of urban agriculture led to a number of sources that are included in the chapter on the relationship of the general characteristics of urban agriculture to urban design. Solutions to the difficulties of integrating urban agriculture into the design process are proposed in the discussion of shortcomings in the research in urban agriculture.

Another avenue of research that surfaced during this time period was a link between urban agriculture and the environmental justice movement in the United States. Discussions at the Crescent City Farmers Market led to a publication by Urban Wilds in Oakland, California. A copy was obtained by the researcher and was found to contain articles discussing city farming as a weapon against a wide range of social injustices. It is reviewed in the chapter on research that was found outside of academic urban agriculture.

Basic Library in Urban Agriculture

It was decided to distill from the literature found during research a list of fifteen works that would form a basic library for gaining a rapid understanding of the activity and its documentation globally. These fifteen works that are recommended for a basic library in urban agriculture were updated in the fall of 2006 to include qualifying works from follow-up research. One central document, the 1996 UNDP Report, is added to make the complete library. It is presented next.

The 1996 UNDP Report

This section will present a short list of the works central to research in the subject area. It is summarized here to give a compact presentation of materials that might be used to gain a substantial foundation for understanding the breadth and depth of research in urban agriculture. The list contains one very comprehensive work that is regrettably difficult to access, and fifteen other works chosen for both their availability and for coverage of specific aspects of the diversity that exists in the field.²

Central to research on urban agriculture is a 1996 UNDP publication, Urban Agriculture: Food, Jobs, and Sustainable Cities, United Nations Development Program, Publication for Habitat II, Volume One. Because this work is not an assemblage of articles it does not show up during journal searches. It is also not a published-for-sale book, so it is not found in book title searches. It was found as a cited source in

the work of Michel Bell, An Invitation to Environmental Sociology, which was used in Prof. Timmons Roberts' Fall 1999 course, Restructuring Environmental Struggles. It was also to show up as a cited source in many of the works obtained through inter-library loan. Curiously it is not listed as an available report on the UNDP website. Probably because it is no longer available

IDRC site offers an eight-page bibliography in the Cities Feeding Cities section of its research. The IDRC site also contains a list of 40 (as of Fall 2006) CFP (Cities Feeding People) reports, some of which are available for download. A number of the more relevant reports are reviewed where appropriate later in this work. Titles of all of the current 40 articles are listed at the end of the bibliography. More information is available about each listing. Both sources will be reviewed in the chapter on Web Resources and the complete URL's given.

The rest of the recommended reading, a *quick reference list*, follows below in alphabetical order. They were selected for easy availability, on-line, purchase or ILL, or for the fact that each introduces a distinct aspect of urban agriculture.

15 Works of Recommended Urban Agriculture Reading

1. Ali, Mubarak, Fe Porciuncula, "Urban and Peri-urban Agriculture in Metro Manila: Resources and Opportunities for Food Production," AVRDC Technical Bulletin No. 26, Tainan, Taiwan. 2001, (<http://www.avrdc.org/tb26.html>) A very comprehensive analysis of a specific Asian context. Along with the works of Daniel Maxwell, could be the role-model for a standard format in the gathering of needed baseline global information.
2. Ashman, Linda et al., "Seeds of Change: Strategies for Food Security for the Inner City", Los Angeles: Southern California Interfaith Hunger Coalition, 1993 One aspect of developed nation urban food programs.
3. Asian Vegetable Research and Development Center, (AVRDC) publications; <http://www.avrdc.org/publist.html>. Recent emphasis in the long tradition of Asian urban vegetable production. In particular technical bulletins # 19, 26 which are reviewed and # 27: TB27 The Vegetable Sector in Indochina Countries: Farm and household perspectives on poverty alleviation.
4. Cities Feeding People (CFP) Report Series 1-40 (*as of Dec. 2006*). IRDC on the web: www.idrc.ca/cfp/index_e.html. Especially Report #'s 7,8,9,12,14,18,26,28,30,31 and 36 for general and regional characteristics. List of CFP Reports to date given at end of Bibliographies.
5. Hart and J. Plurimus, *Wasted Agriculture: The use of Compost in Urban Agriculture*, Waste Inc., 1996; An introduction to the equilibrium and sustainable aspect of intensive urban agriculture
6. Koc, Mustafa, For Hunger-Proof Cities: Sustainable Urban Food Systems, Toronto: Ryerson Polytech University, 1999 Twenty-eight very thorough articles under 8 chapter headings. Excellent general characteristics of core urban agriculture activities
7. Maxwell, Daniel G., Labor, Land, Food and Farming: A Household Analysis of Urban Agriculture in Kampala, Uganda, University of Wisconsin, 1995; Dan Maxwell has done a number of works on urban agriculture in Africa. This is one of the most recent and is very extensive at over 500 pages. It is available through inter-library loan as a thesis copy, also: *Political Economy of Urban Food Security in Sub-Saharan Africa*, FCND Discussion Paper No. 41, Washington, D.C.: International Food Policy Research Institute, Food Consumption and Nutrition Division, 1998, is a more recent work by D. Maxwell that was not obtained, but could prove to be more easily accessible and more concise. A number of other titles are listed in the bibliography.
8. Moskow, Angela Lynne, "The Contributions of Urban Agriculture in Havana, Cuba to Individual Control and Community Enhancement", Masters Thesis, University of California, Davis, 1996; A very thorough investigation of an area of urban agriculture often overlooked, i.e.: the characteristics of the people practicing urban agriculture. The work's overview of urban agriculture is comprehensive and is recommended by this researcher as a way to come to an understanding of the history and current (1996) thrust of urban

agriculture. The project is in Havana, Cuba, but the overview covers worldwide activity. This section, standing along, would answer nearly all the questions the researcher had at the onset of this project.

9. Murphy, Catherine, Cultivation Havana: Urban Agriculture and Food Security in the Years of Crisis, Food First Institute for Food and Development Policy, Development Report No. 12, May 1999. A more recent and concise report on urban agriculture in Havana than the Moskow work. It gives a good analysis of the structure and constraints of urban agriculture in Havana. Being a Food First Development Report, it is more readily available.
10. Ratta, Anna, and Jac Smit, “Urban Agriculture: It’s About Much More than Food”, World Hunger Year Magazine (Summer 1993) , pp. 26-29; This covers some of the economic, societal and cultural issues involved.
11. Rees, William E. Cities Feeding People: A Growth Industry, Notes for IDRC Development Forum on Cities Feeding People. City Farmer. 1996. An old report, but the easy availability of IDRC makes it easy background for African characteristics.
12. Smit, Jac and Joe Nasr, “Urban Agriculture for Sustainable Cities: Using Waste and Idle Land and Water Bodies as Resources”, *Environment and Urbanization* 4, no.2, 1992, pp. 141-151; Jan Smit is an early researcher and organizer of urban agriculture and the “manager” of the thoroughly extensive website: City Farmer, which will be discussed later. Jac Smit, Anna Ratta and Joe Nasr are the writing team for the Urban Agriculture Network that produced the UNDP Urban Agriculture Report mentioned above.
13. Tinker, Irene, guest ed. “Urban Food Production: Neglected Resources for Food and Jobs.” a special issue of Hunger Notes. 18:2. (Fall 1992) Eleven articles in this issue are very informative.

14. Wade, I., “City Food: Crop Selection in Third World Cities”, San Francisco: Urban Resources Systems, 1986; an early work but very informative.
15. Woelfle-Erskine, Cleo, ed., Urban Wilds: gardener’s stories of the struggle for land and justice, water/under/ground publications a pollinators exchange, 2nd edition, fall 2003; A wide-ranging compilation of articles that starts with a quote from Malcom X about land, justice and freedom and moves forward to establish farming in cities as a tool in the struggle for environmental justice.

These 15 references, along with the 1996 UNDP Report, would supply the *homework* for an introductory course in Urban Agriculture. There are many other valuable, insightful and informative works in this field but these sixteen are comprehensive and obtainable. The USDA and IDRC sites mentioned above could be visited for any specific areas of interest.

Review of the Literature on the Subject of Urban Agriculture

The Centrality of the 1996 UNDP report to Research in Urban Agriculture

Literature on the general characteristics of urban agriculture is available and accessible. Since the mid-1980’s through about 2000 a number of concerned and informed researchers working in the field focused energies into presenting the attributes of urban agriculture as a positive force for urban development. There appears to be the belief that an effective articulation of the activities would enable increased inclusion and support of the activity in urban planning to the benefits of the urban poor, in specific, and urbanites in general.

After UNDP report review, works reviewed on this aspect of urban agriculture are:

- Rees, William, Cities Feeding People: A Growth Industry, 1996.

Smit, Jac. What the World would be like in the 21st Century if Cities were Nutritionally Self-Reliant?. The Urban Agriculture Network, (TUAN). (1996).

Stix, Gary, "Urbaculture: Cities of the Developing World Learn to Feed Themselves," Scientific America, June 1996.

Moskow, Angela Lynne, "The Contributions of Urban Agriculture in Havana, Cuba to Individual Control and Community Enhancement", 1996.

Introduction to the 1996 UNDP Report

This researcher could create a new organizational framework for the subject of research in urban agriculture but, except for a few small areas of omission, a better one couldn't be created than the table of contents of the above mentioned 1996 UNDP Report on Urban Agriculture. Its broad headings are reproduced below and that is followed by a literature review of the chapters of that work. The works of other authors in this field are reviewed as they fit into this structure. Areas of investigation not covered by this framework will be noted and these works, which cover these areas of omission in the UNDP report, will be reviewed at the end of the process. This work alone would have substantially answered this researcher's initial enquiries about the nature of activities in urban agriculture and the research into these activities. Its omissions are also largely due to its developmental emphasis and the general omissions of the research being done in the field.

In the Forward to the UNDP report the authors state its four purposes: 1. Present a comprehensive picture of urban agriculture in Asia, Africa and Latin America; 2. Define a distinct industry that needs to be recognized; 3. Persuade leaders in public and private institutions to conduct research in and eliminate constraints on urban agriculture; 4. To foster a climate that empowers the practitioners and agencies that back them.

This statement of purpose reveals one of the largest omissions of the UNDP report: Northern Asia, Australia and New Zealand (and for all practical purposes North America and Europe) will not be covered in depth, although urban

agriculture takes on many diverse forms in these regions. Although North America and Europe are reviewed in Chapter Two: Urban Agriculture Yesterday and Today, they are not the focus of the bulk of this work, Chapters 3-10. This omission is understandable since by name and nature the UNDP focuses on developmental regions of interest. The omissions of China, Mongolia, Korea, much of the Middle East and the Asian former Soviet Republics are probably more a factor of accessibility and translations of past research than perceived lack of inclusion in developmental regions. This work is the product of a developmental agency not that of an urban agriculture network. In Chapter Six: Which Organizations Influence Urban Agriculture, it is noted that: "No uniform, formal global survey of urban agriculture has been undertaken to date; however, a number of universities and research organizations have conducted city and national surveys, especially in Africa." The UNDP Report was compiled in 1996, but the recommendation for a comprehensive academic or professional global definition and survey is probably still unfulfilled, although a number of organizations have tried to pull together a good deal of material, each from its own perspective and interest in the field. Some of these will be discussed later in this research.

The Forward further points out that urban agriculture is overlooked, under-estimated and under-reported. The authors invite the reader to contemplate:

"„some of the broader implications of farming in the city: towns, cities and metropolises that are ecologically sustainable; an opportunity for the poor to become nutritionally self-reliant and to supplement their income; and a thriving industry that contributes to economic development. This is the promise that farming holds for urban areas." (UNDP, xxi, 1996)

Table of Contents of the 1996 UNDP Report

The broader structure of the Table of Contents of the UNDP Report is given below. It is reproduced in full in Appendix 1 so that the totality of its subdivisions and the breadth of issues involved in urban agriculture can be seen.

Urban Agriculture: Food Jobs and Sustainable Cities

Contents

Part I: The Global Significance of Urban Agriculture

1. Cities that feed themselves
2. Urban agriculture yesterday and today

Part II: What is Urban Agriculture?

3. Who are the urban farmers?
4. Where is farming found in the city?
5. Producing food and fuel in urban areas
6. Which organizations influence urban agriculture?

Part III: Benefits, Problems and Constraints

7. The benefits of urban agriculture
8. Problems related to urban agriculture
9. Constraints on urban agriculture

Part IV: The Future of Urban Agriculture

10. Promoting urban agriculture through policy and action

General Characteristics: Past and Current Urban Agriculture

The 1996 UNDP report gives a comprehensive presentation of the basic concepts and structures of urban systems and the position of urban agriculture in urban food supply. Myths about the phenomena are exposed and realities presented. A brief history is given as an introduction to current activities in specific global regions. The UNDP presentation of these topics follows with other authors also reviewed afterwards.

Part One: The Global Significance of Urban Agriculture

Chapter 1: Cities that feed themselves presents the characteristics, processes and structure of urban agriculture. Presumably because this report is the product of a developmental agency and focuses on overall societal effects, there is emphasis on urban agriculture's ability to raise the quality of life of its practitioners.

“Urban agriculture is an easy-in, easy-out entrepreneurial activity for people at different levels of income. For the poorest of the poor, it provides good access to food. For the stable poor, it provides a source of income and good-quality food at low cost. For middle-income families, it offers the possibility of savings and a return on their investment in urban property. For small and large entrepreneurs, it is a profitable business.”(UNDP p.4)

Both *urban* and *agriculture* are defined in a broad sense to include all the activities that the authors want to consider and present as having influenced these positive societal effects. The chapter goes on to present the historical structure of urban food supply and the interrelationship of urban agriculture with that structure. It is noted that the percentage of poor living in the urban centers of developing countries changed from 33% to 57% between 1988 and 2000. The strain that this causes the urban food supply structure and the relief that urban agriculture can and will need to supply as the trend of increasing urban poor continues, was proposed as a reason for further research and support into urban agriculture activities. (UNDP 1996)

In the area of a general introduction into urban agriculture, William Rees' work: Cities Feeding People: A Growth Industry provides more current information. For him, urbanization has distanced people spatially and psychologically from the land that supports them. In rich nations, agriculture, in general, has been marginalized from the common scenery and from the national consciousness. Urban Agriculture in rich nations is a hobby and hardly seen as serious activity. A strong opinion contrary to this view of urban agriculture in rich countries will be represented by Cleo Woelfle-Erskine's work Urban Wilds that will be reviewed in a later section on Literature Found Outside of Academic Urban Agriculture. In poor countries, swelling urban populations cannot take food supply for granted. Urban agriculture plays a role in physical and economic survival. In Hong Kong, 45% of local vegetable needs come from 6% of the local land area.

Rees also focuses on the benefits of urban agriculture in an “unsustainable world.” These can include: reduced transportation costs, wasted urban heat being utilized to warm greenhouses and a lessened need for packaging and refrigeration. There are also possible reductions in organic

wastes and the reduced dependence on chemical fertilizers. There is the potential to maintain or enhance bio-diversity by maintaining the cultivation and production of crops, varieties or species otherwise uneconomical in mass cultivation. (Rees, 1996)

In a paper for The Urban Agriculture Network (TUAN), “What the World would be like in the 21st Century if Cities were Nutritionally Self-Reliant?” (1996), Jac Smit points out that in both rich and poor countries, cities are *de-densifying*. The industrial gridirons and core corridor structures of urban patterns are being replaced by a “nodes and links” network. This new pattern has more space and permits closer contact between man and biosphere. The paper presents a future where manufacturing and agriculture are distributed equally between rural and urban settings.

Smit simplifies the positive relationship between urban agriculture and resources in three points: 1. Some urban by-products, waste water and organic solid waste; can be recycled, (as was done in the past,) as usable resources. 2. Idle lands and bodies of water in cities can be converted into intensive agriculture production, 3. Some conservation of national resources in energy for transportation and refrigeration can occur due to the proximity of urban agriculture to the consumers. (Smit 1996)

During the interest in urban agriculture that led up to the 1996 Habitate II UNDP Report, Gary Stix wrote a piece for the June 1996 issue of *Scientific America*: “Urbaculture: Cities of the Developing World Learn to Feed Themselves.” He points out that urban agriculture is the opposite of and countering to the fragility of single crop agriculture. He lists potatoes grown in stacked tires in Mexico City, cactus, which are both food and cash crop, raised in yards, patios and on rooftops, rooftop compost beds, and fish co-ops using treated sewer water, all as incubating and maintaining diversity. (Stix 1996)

Chapter 2: Urban Agriculture yesterday and today begins: “Urban agriculture throughout the world is undergoing a transformation in response to political, economic environmental and technological change.” As a background for understanding this change it gives a summary history of the phenomena.

The history of urban agriculture began in the urban process of all ancient world civilizations. It is suggested that “intensive food production is what allowed societies to create cities and civilizations.” Intensive farming abutting the city was essential to the forming and maintenance of the city. Evidence of urban agriculture has been found in Ghana, China, India, Java, Pakistan, Guatemala, Mexico and Peru. Peri-urban agriculture was routinely used to treat, dispose of and use as a resource, urban wastes before the development of modern sanitation systems were developed in the late 1800's. As an example, the “marais” farming system of 19th century Paris, which yielded 3 to 6 harvests per year on 1/6th of the land area of the city, was described and is being studied for urban agriculture use today.

Urban agriculture today varies from 10% in large North American cities to as high as 80% in Siberian and Asian smaller cities. From 1970 until 1991 the percentage of Moscow residents participating in agriculture grew from 20 to 65%. Urban agriculture is not only a poor country phenomenon. Taiwan, which is mostly urbanized, but considered fairly developed, has ½ of its families in farmer associations. In the U.S.A., urban metropolitan areas produce 1/3 of the dollar value of all agriculture products. It can also be a very dominant and extensive phenomenon in particular circumstances. The high vegetable and small-livestock demands of Shanghai are totally met by the metropolitan region itself. (UNDP 1996)

Another work that concisely supplies some background for urban agriculture is the thesis of Angela Moskow: “The Contributions of Urban Agriculture in Havana, Cuba to Individual Control and Community Enhancement,” U.C. Davis, 1996. In her chapter, Urban Agriculture in a Global Context, she adds additional information on the importance and necessity of urban agriculture. Third World low-income families use 40-80% of their budgets on food expenditures, with the average being greater than 60%. They can be totally dependent on the commercial marketplace for their food. Urban agriculture can modify these constrictions on sustenance independence. She summarizes the benefits as: 1. Supplementing household income, 2. A means for women to earn income without directly challenging cultural and social restrictions, 3. It can be an easy access activity, and 4. It increases food security.

In this chapter she also presents the general nature of and social benefits of urban agriculture as an introduction to her specific investigation. This investigation is into the characteristics, motivations and benefits of urban agriculture to particular groups practicing urban agriculture in Havana, Cuba between 1993 and 1996. (Moskow 1996) The main inquiry of her work will be reviewed in the Latin American section of the Regional Manifestations review below. It is mentioned here as a source of a very complete overview of urban agriculture. The thesis by Dan Maxwell, which will be reviewed in the African section of this paper, can also be accessed for a very thorough overview of urban agriculture.

Review of the Literature on Regional Manifestations of Urban Agriculture

Literature on the regional manifestations of urban agriculture is extensive, but scattered and unevenly available. A number of researchers have published comprehensive documentations of activities in their particular cities or regions. These excellent compilations and analyses often present compelling features of the activities, but are often not comparable, one to another effort of research, because there has been no standardization of research format.

The next sub-sections of *Chapter 2: Urban Agriculture yesterday and today*, give the background and current status of urban agriculture in various regions of the world. Summaries of activities in Asia, Africa, Latin America, Europe and North America along with a *Summary across Continents* are given presenting between one and four pages each. Asia and Africa each have about four pages of coverage, Latin America almost three and Europe and North America about one page each. This geographic review is only 14 of the over 250 pages of the UNDP report, but it will be where the bulk of the reviews by this researcher will be placed as an organizational structure.

In following the structure of the UNDP Report this review will address works of authors that have regional focus in the same order that those regions are presented in Chapter 2 of the report. Each region will begin with a review of the material presented in the UNDP Report and then that will be followed by reviews of other authors working in that region.

Asia

After UNDP report review, works reviewed on Asian regional activities of urban agriculture are:

Asian Vegetable Research and Development Center,
(AVRDC) publications;
(<http://www.avrdc.org/publist.html>)

“Prospects for Improved Livelihood, Food Security and Environmental Integrity in the Cities through UPA,” a report from the workshop: Urban and Peri-urban (UPA) Agriculture in the Asian and Pacific Region.

Yeung, Yue-man, “Examples of Urban Agriculture in Asia.” Food and Nutrition Bulletin, vol. 9 (2), UN University Press, June 1987: p. 14-23.

Yokohari, Makoto, “Agro-activities in the Fringe of Asian Mega-Cities,” Journal of the Japanese Institute of Landscape Architecture, International ed. No.2: 128-133 (14)

Ali, Mubarak, Fe Porciuncula, “Urban and Peri-urban Agriculture in Metro Manila: Resources and Opportunities for Food Production,” AVRDC Technical Bulletin No. 26, Tainan, Taiwan, 2001,
(<http://www.avrdc.org/tb26.html>)

Asian countries, in general, have a long tradition of organized urban agriculture. It is intensive and widespread across the region promoting the agricultural recycling of wastes. There is a great diversity of products. There is continuity from the past that allows it to currently be accepted as a normal urban land-use function in most Asian countries. As an example, many cities in China are able to be self-reliant in non-grain foods. Singapore is 25% self-reliant in vegetables and 100% in meat. In Asia, urban agriculture is dominated by women. Japan has little cultivatable land as a country, increasing the tendency towards urban agriculture and it is one of the only countries that take a regular census of urban agriculture activity. In Asia, both seeds and tools have evolved over time for the use of urban agriculture. A market system tailored to the needs of the urban farmer aids in their viability. A tradition of activity is also noted in Manila, Karachi, Pakistan, Colombo, Sri Lanka and Java, Indonesia. (UNDP 1996)

Publications of the Asian Vegetable Research and Development Center, AVRDC, show that the interest and support in this activity continues at the present. This organization is an excellent resource for publications and other activities in urban agriculture. It can be found on the web at <http://www.avrdc.org.te/>. The AVRDC Technical Bulletin No. 26 will be reviewed below. The most notable difference in the character of urban agriculture in Asia is the aforementioned fact that there is a continuity of acceptance for urban agriculture as a normal urban function and as a valid urban land-use practice. In other regions the practice has developed out of desperation or dissatisfaction and is contrary to the “official” land-use prescriptions. The activity here is so culturally ingrained that it has been transplanted to North America and taken root in ethnic enclaves with the immigration of Asian groups. This has been documented as part of North American activity as will be discussed later.

Another important Asian resource is Food and Fertilizer Technology Center (FFTC), an international information center for farmers in the Asia Pacific Region. In May of 2006 it co-sponsored with the Philippine Council for Agriculture, Forestry and Natural Research and Development (PCARRD) a workshop titled: “Urban/Peri-urban Agriculture in the Asian and Pacific Region.” The focus was the sharing of current trends, experiences and technologies in urban agriculture. In review of the report issued by this workshop, Prospects for Improved Livelihood, Food Security and Environmental Integrity in the Cities through UPA, it is seen that the general tenor of activities in Japan, Korea, the Philippines and Taiwan are presented along with general issues and concerns. Integration into urban planning, technology transfers and government support are seen as crucial to future prospects. (FFTC 2006)

The Urban Harvest Program of the Consultative Group on International Agriculture Research (CGIAR) collects information specific to Asia. The Urban Harvest website has five pages of news and events from Asia that present activities in the Philippines, Vietnam, Cambodia and general documentation of activities across the region. Links are given to other organizations in the region. Bibliographies and source lists on this and other sites lead the researcher to believe that literature on urban agriculture in Asia is quite considerable. As has been noted, the activity has a historic

continuum in the region. It can be seen by looking at the organizations focused on this issue that the general agriculture community, academic and developmental, is more closely in touch with the urban activities as a companion to its rural support interests. The initiatives that come out of the agriculture community are often crop and market specific and focused on the particular climate, soil or geographic of a city. In other regions of the world urban agriculture has been largely ignored by institutional agriculture research. Three specific works relevant to Asian urban agriculture will be reviewed.

Yue-man Yeung wrote an article, “Examples of Urban Agriculture in Asia,” that appeared in Volume 9, Number 2, June 1987 issue of Food and Nutrition Bulletin published by the United Nations University Press. It is well researched and lists 24 contributing resources. There is a discussion of the problems of urban agriculture in relation to an ideal goal of supplying a large proportion of a city’s needs in vegetables, fruits, livestock and fish. The loss of fertile farmlands, conflicts with planners and administrators and increasing dependence on imported foods are mentioned. Five features of production patterns are outlined. They include the importance of fish in the Asian food basket, a transition from grain-based to cash crops, the scarcity of fruit production, historical urban agriculture has been intensive and successful and the promotion of home gardens by Asian countries. The following six cities are profiled: Shanghai, Lae, George Town, Hong Kong, Singapore and Manila. It is concluded that it is not impossible for Asian cities to feed themselves. There is a history of success, but ways must be found to overcome impediments. This 1987 paper is very hopeful and prescient as it ends with the advice that: “If Asian cities are to maintain and raise their standards of living, they must not let population growth overrun their within-city capacity to produce food.” (Yeung 1987)

More recent information is contained in the 2001 article by Makoto Yokohari, titled: “Agro-activities in the Fringe of Asian Mega-Cities.” It was published in the Journal of the Japanese Institute of Landscape Architecture, International ed., No. 2: 128-133 (14). A conflict is noted between the application of Western planning concepts and the mixture of agricultural lands and urban land usages in the metro fringes. It is proposed that these agro-activities be seen as a

vernacular element of the area. By Western standards this is seen as a “disordered suburban land use,” but the historic tradition of this usage, contrary to European tradition, is noted. A presentation of contemporary urban agriculture activities is given with the examples of Metro Manila and Tokyo. It is concluded that the Western urban planning concepts may not be suitable in an Asian context and that agriculture may be considered “...an indispensable element of Asian urban fabrics.” (Yokohari 2001)

An example of an extensive and specific urban agriculture research document is the 2001 AVRDC Technical Bulletin No. 26 authored by Mubarak Ali and Fe Porciuncula, Urban and Peri-urban Agriculture in Metro Manila: Resources and Opportunities for Food Production. This thorough analysis of urban agriculture in Metro Manila has sub-sections for information on geographic, economic, resources, and infrastructure data, agriculture marketing and markets, pollution, environment, food demand, characterization of urban vegetable farmers and approaches to improve urban agriculture. The specifics of this report are an example of the type of research that needs to be carried out across all urban contexts where agro-activities are found or where it is determined they could be beneficial. The main constraints in Manila are found to be not enough land and water being available. Positives include the farming knowledge of the urban poor. Suggestions are to introduce small-scale livestock and poultry production, indoor crop production and farm-products processing. Another suggestion is the introduction of new technologies into the surrounding areas. A major goal is to achieve a stable year-round vegetable supply. This bulletin is an important document both in publicizing the specifics and future of urban agriculture in Metro Manila and as an example of thorough urban context analysis relative to agro-activities. (Ali and Porciuncula 2001)

It is quite possible that a great deal of research in urban agriculture activities in Asia was not found because it has not been translated and published in a Western language. The yearly census of Japanese urban agriculture activities mentioned in the UNDP report was not found in any journal or library searches. Although multiple mentions of a tradition of integration of these activities in the Asian urban

context, few local surveys, statistics or documentation were unearthed. It is thought that this must be due, in part, to a lack of translations from the native languages. It may be that there is a wealth of information still to be shared globally.

Africa

After UNDP report review, works reviewed on African regional activities of urban agriculture are:

Egziabher, Axumite. Urban Irrigation and Cooperative Organizations in Addis Ababa, Ethiopia. Network Paper 25. 1994.

Maxwell, Daniel, “Labor, Land, Food and Farming: A Household Analysis of Urban Agriculture in Kampala, Uganda,” Thesis (Ph.D.) University of Wisconsin – Madison. 1995.

Memon, Pyar Ali and Dianna Lee-Smith. “Urban Agriculture in Kenya.” Canadian Journal of African Studies, vol. 27 (1), 1993: p. 25-42.

Obosu-Mensah, Kwaku. “Changes in Official Attitudes towards Urban Agriculture in Accra.” African Studies Quarterly 6, no.3, 2001.

Africa is a region where a good deal of documentation is available. Urban Agriculture has been practiced for a long time, but in contrast to the activity in Asia, it is largely unsupported by government or official agencies. There is a historical tradition of urban agriculture, but no continuity of its activity from pre-colonial to modern development. Colonial urban development was centered on building a European glory distinct from the conquered rural cultures. Their ideas of a city image were too “clean” to allow urban farming.

The independence period saw rapid urbanization and removal of colonial support and the re-development of urban agriculture. These projects include a mix of individual and co-op efforts. Hindering these efforts is a complicated land title tradition where culturally almost all farming was carried out on “community land.” The colonial period introduced titled land and as a result many people have little access to land. Much of the urban agriculture in this region is quasi-legal due to this title/access restriction and due to the lack of support from governments. (UNDP 1996)

In the area of African urban agriculture, the work of three authors and one group report were obtained. Axumite G. Egziabher's 1994 work: Urban Irrigation and Cooperative Organizations in Addis Ababa, Ethiopia, researches five cooperative groups in Addis Ababa. Together they cultivated 274 hectares, which was 1.23% of the area of the city of Addis Ababa. The hindrances to their success were found to be:

- a. a lack of legal recognition,
- b. the land used was divided between community and private plots,
- c. because this was an illegal activity, the participants were unable to get credit for investment,
- d. and, the participants had difficulty assuring water supply.

Despite these difficulties the successes of the cooperatives were found to be due to:

- a. the fact that they were formed by themselves for survival,
- b. they relied on determination and the efforts of the members,
- c. there was a continuity of leadership,
- d. the members had experience in vegetable growing,
- e. and, despite being an illegal activity other factors in society have supported the organization and actualization of its goals.

(Egziabher 1994)

Urban agriculture in Kampala, Uganda is representative of the conditions in many African urban contexts, and it has been documented extensively by Dan G. Maxwell. In Labor, Land, Food and Farming: A Household Analysis of Urban Agriculture in Kampala, Uganda, University of Wisconsin, 1995, he describes four categories of participants in urban agriculture:

1. Producers for urban markets who farm either leased or owned land as part of the local cash market.
2. Households in peri-urban areas who retain their traditional land holdings and from these holdings are food self-sufficient.

3. Those who use urban agriculture to gain a measure of food self-sufficiency, therefore urban agriculture is a secondary form of employment and a source of food.
4. Low income women who are widowed or abandoned and therefore have no other means to acquire food.

The participants in each of these categories are viable according to their ability to access land. A majority of households in Kampala are in a survival crisis and in order to survive have a reliance on non-wage income. The production of this activity is consumed and as such it becomes a "hidden" activity. The main risks are not drought or pests, as much as a loss of access. Farmers with physical limitations (small plots) found that this is only a partial constraint and with continual access were able to succeed.

Maxwell found urban agriculture at odds with the national policy of expanding the domestic market for the products of an expanding (planned and supported) agriculture sector of the economy. He felt this policy did not consider the locus of poverty and he felt that the state had shed its responsibility for protecting the poor. (Maxwell 1995)

In 1993 Pyar Ali Memon and Diane Lec-Smith published an article, Urban Agriculture in Kenya. It begins with a question as to why urban agriculture has been excluded from the definition of the *informal sector* in African cities. They propose that the informal sector is in the middle of a debate between "dualists" and "conceptualists" and that urban agriculture is rarely considered in that debate because it is considered a subsistence activity. They admit that the subsistence characterization is true since 70% of urban farmers in Kenya produce for their own consumption, but asks if such important subsistence activities, carried out mostly by women, should be relegated as irrelevant and economically unimportant? To demonstrate the relevance they point out that cash cropping (formal sector) does not support subsistence but competes with it for land. Absolute reductions in women's production and incomes are part of the food crisis in many African countries. Thus urban farming becomes important to the survival of many urban Africans.

The boundaries of early urban centers were drawn up for colonial reasons that specifically included avoiding subsistence farming and settlement for perceived “sanitary” reasons and in order to set up colonial enclaves that were “islands of health.” In the urban setting indigenous African populations and their traditional means of livelihood were proscribed and policed.

Urban farming historically was begun in Kenya by immigrant Italian railroad workers. It was only during the last 40 years that the African population was allowed to live in the urban centers of Kenya and there was a significant rural - urban migration. African urban farming began with this migration and the urban expansion, due to population pressures on the urban context, back out into former farming territory. Currently, urban agriculture is practiced by all incomes levels of society, but the highest percentage of participation is in the lowest income groups.

Subsistence urban farm production and small-time commodity exchange have been ignored in development and spatial planning. They are unsupported by the formal sector to the point of being outlawed, but it is the main mechanism by which the domestic economy functions for survival. The fact that urban farmers in Kenya are mainly women producing for their families’ consumption is no reason to ignore the positive economic consequences and potential for developmental planning. (Memon and Lee-Smith 1993)

In African Studies Quarterly 6, no.3, Kwaku Obosu-Mensah wrote a 2001 article titled: “Changes in Official Attitudes Towards Urban Agriculture in Accra.” The paper identifies urban agriculture as one of the most important informal sectors activities in Accra. It documents the change in attitudes of officials from negative to supportive once they understood the importance of the activity. The impressions of negative effects from urban agriculture are presented. The paper documents that gradually policy makers and government officials understood that the positive socio-political, economic and nutritional factors of urban agriculture are important in the face of continually increasing populations of Ghanaian cities and towns. (Obosu-Mensah 2001)

African urban agriculture appears to be well documented by outside researchers, but is under-appreciated by regional development planners. This may be a consequence of it falling between the auspices of traditional academic disciplines as will be discussed later at more length.

Latin America

After UNDP report review, works reviewed on Latin American regional activities of urban agriculture are:

Eck, Michele, “The Role of Gardens in the Urban Area of Ticul, Yucatan, Mexico”, Abstract of Masters Thesis, University of Florida, Center for Latin American Studies, 1996.

Murphy, Catherine, Cultivating Havana: Urban Agriculture and Food Security in the Years of Crisis, Food First Institute for Food and Development Policy, Development Report No. 12, May 1999.

Moskow, Angela Lynne, “The Contributions of Urban Agriculture in Havana, Cuba to Individual Control and Community Enhancement”, Masters Thesis, University of California, Davis, 1996.

Bohrt, Julio Prudencia, Report 7 in English: Urban Agriculture Research in Latin America: Record, Capacities and Opportunities. Ottawa: International Development Research Centre. 1993.

Most Pre-Columbian civilizations in the Americas had a tradition in urban agriculture as old as that tradition was in Asia. As these early Pre-Columbian American activities were destroyed or left unattended during European dominance, there is no continuity of urban farming tradition to the modern era.

Spanish and Portuguese colonial cities were developed as managing structures for the frontier. Control of vast lands was the organizing theme, and urban agriculture was not part of the process of establishing control over these vast “new” lands. Urban agriculture re-emerged following movements for independence and with the rapid urbanization following WWII. As a survival mechanism it “grew” in the shantytowns of expanding colonial cities. In officially

supported projects most of the modern urban agriculture was based on rural European models that did not prove productive. Asian models of intensive production were introduced by the Japanese in Sao Paulo and the Taiwanese in Panama. International humanitarian organizations introduced French intensive technology. Mexico City, Curitiba and Sao Paulo have official urban agriculture programs. In 1995 the Latin American Urban Agriculture Network was formed to promote these activities. (UNDP 1996)

The work of Michele Y. Eck, “The Role of gardens in the Urban Area of Tical, Yucatan, Mexico,” 1996, is an example of the research being published on local urban agriculture in Latin America in the near past. As with the following authors reviewed, it focuses on individuals and their gardens. Very little has been written on the absolute subsistence activities of squatters as in the body of the African research work, or on the more organized tradition and agency-supported activities studied by Asian researchers. Activities supported by formal agencies hardly exist here, are considered very experimental and are further tainted by being seen as imposed by outside developmental agencies. Eck documents that 50 square yards of arable land has potential to produce 100% of the A and C vitamins, 50% of iron and 18% of the needed protein. He studies 20 gardens with an average area of 1200 square meters from which 20% receive income. This means that a strong majority of the cultivation is for consumption only. Eck used a questionnaire to determine not only the plot and technology information, but also social, cultural and environmental benefits. (Eck 1996)

Catherine Murphy’s work, Cultivating Havana: Urban Agriculture and Food Security in the Years of Crisis, May 1999, is available in full from the FoodFirst website. It has a good summary of the recent history of urban agriculture worldwide and quotes Rachel Nugent in a City Farmer article to enumerate the significance and benefits of urban agriculture.³

Nugent’s benefits are:

- Increasing community food security
- Providing local jobs
- Greening and beautifying cities
- Recycling nutrients
- Treating waste
- Empowering urban people
- Localizing food production
- Bringing the products closer to the market
- Improving freshness and variety of produce
- Involving city residents in the cultivation of their own foodstuffs.

(Nugent 1997)

Continuing on in the Introduction, Murphy presents an informative UNDP table showing the percentage of residents that are urbanized, by region and year. 1970 and 1995 are given and 2025 is projected to illustrate the increasing emphasis on the urban context throughout the world. By the year 2025, 80% of the world will live in cities (UNDP 1996). This is used to emphasize the fact that the social and environmental benefits of urban agriculture will be increasingly needed as the apparent urban migration continues. A thorough summary of the agricultural history of Cuba is given, with an emphasis on the role of the Special Period in focusing attention on urban production. In contrast to the unfocused attitude in other parts of Latin America, the Cuban Ministry of Agriculture created a coordinated urban agriculture program.

Although Murphy’s statement that “Urban agriculture was almost non-existent in Havana before 1989” is contradicted by the next author, Angela Moskow, this researcher thinks that one can take this to mean that the documented economic impact of urban agriculture was non-existent although the practice existed informally. Both authors mention that Havana had laws prohibiting the cultivation of agricultural products in front yards. The

³ Nugent, Rachel. “The Significance of Urban Agriculture,” City Farmer, 1997. The Nugent piece was not obtained but the contributions of the City Farmer will be discussed later

“Crisis” changed all of that. By 1998, 30% of Havana’s available land was under cultivation in one of five types of activity as documented by Murphy:

- Huertos Populares - privately tended small parcel all over Havana cultivated by urban residents
- Organoponicos y Huertos Intensivos - Intensive raised container beds with a high ratio of compost material either run by private individuals or institutions
- Autoconsumos - Self-provisioning gardens that belong to and produce for workers, generally supplying the cafeterias of a particular workplace such as a hospital, factory or school
- Campesinos Particulares - Lands largely in Havana’s Greenbelt, that are farmed by individual small farmers
- Empresas Estatales - (State enterprises) - Businesses owned and run by the state with increasing decentralization, autonomy and varying amounts of profit sharing by workers.

The bulk of Catherine Murphy’s report is about the nature of these types of urban agriculture and the agencies and organizations that support them. Problems in these activities are identified as:

- Water shortage
- Lack of arable soils
- Pest and disease control
- Lack of seed diversity
- Labor shortage and lack of youth involvement
- Theft

There is a summary of sources that support how urban agriculture has improved the Cuban diet. The success is attributed to the support of the Cuban state. The conclusion proposes that “...other cities of the world have much to learn from the Cuban experience with urban agriculture.” It might be added that other governments have much to learn from the support of urban agriculture by the Cuban government. There is little investigation in this report on the skills, motivations, or the time spent in labor of the participants of urban agriculture in Havana. (Murphy 1999)

These last mentioned overlooked items are among the areas which have been studied by Angela L. Moskow in: “The Contributions of Urban Agriculture in Havana, Cuba, to Individual Control and Community Enhancement”, 1996. This work was noted in this researcher’s recommended reading section above and it was noted there that Moskow has an excellent summary of the benefits of urban agriculture. She also presents an overview of food security and the agricultural program of Cuba. Havana was chosen for research by the author because of the “enormous scale of urban agriculture activities and the unique activity of the Cuban government.” The Havana urban agriculture activity is reviewed by Moskow with the same types and scale of activity being identified as was by Murphy in her report. Moskow learned through Agriculture Ministry interviews that the government goal was to utilize 25% of Havana’s land for food production. Having witnessed the Havana urban context on a number of occasions in the early 2000’s, this researcher finds that percentage either overly optimistic or statistically determined by including a great deal of the peripheral “green belt” into the urban Havana calculations. Much of Havana is densely urbanized with little green space available for cultivation and although a good deal has a more suburban context with front, side and rear yards, the amount of land available for cultivation even in these greener neighborhoods does not approach 25% of the lot area. Perhaps what was meant was 25% of the non-built land area.

The focus of the Moskow work is not the types of gardens but the characteristics of the gardeners and the communities where they live and grow their crops. In contrast to urban agriculture in other cultures and regions, 91% of the Havana gardeners were men. This was implied to have been caused by the agriculture background of the men before urban migration. Their average age was 58 and they had worked their plots for an average of 8 ½ years. 30% had worked the same plot since before the Special Period and half of that 30% had worked the same plot for over 21 years.

Thus, although there was a blossoming of urban agriculture activity with The Crisis, increasing 70% since that time, there was also a tradition of gardening with substantial near-time continuity. 67% of the Havana gardeners learned cultivation skills from relatives growing up in the country, so this was a government organized and

supported activity that was not primarily taught by the government. Gardeners averaged 3 hours a day in the gardens. The average in Africa, Asia, and Latin America is 3-4 hours a week. Moskow included documentation of the crops grown.

A conclusion of the study was "...that the gardens were associated with many functions beyond the practical." By gaining control over practical needs the gardeners and their communities realized many other benefits. The average garden provided 60% of the household produce-needs. 39% said that they would continue when the Special Period was over. Control of their own lives was mentioned. In their social and economic lives this is rare and a welcome benefit. The garden also was seen as a personal sanctum and its aesthetic values were appreciated. Control over an aspect of their lives was found to not only come from food security, but also from the ability to relax, connect with nature, and experience solitude. The gardeners identified areas where their gardens benefited the surrounding neighborhoods:

1. More food for community contributions to the revolution,
2. Neighborhood beautification,
3. Improved safety,
4. Increased sustainability.

In talking about their garden activities some gardeners described a sense of "stewardship" for the environment, thus showing a benefit of concern that extended even beyond the local community. In conclusion, a sense for the ground covered by the Moskow work can be gleaned from the titles of the tables found in her appendixes. These were:

- Education attained
- Social background
- Professions
- Produce raised
- Produce raised at other times of the year
- Herbs and spices raised
- What gardeners did not want to grow
- What gardeners wanted to grow but could not

(Moskow, 1996)

The IDRC CFP Report 7: Urban Agriculture Research in Latin America: Record, Capacities and Opportunities, was produced in 1993 by Julio Prudencia Bohrt of UNITAS, La Paz, Bolivia. It broadly covers the state of research in Latin America at the time. There are case studies and

organizations involved in Argentina, Bolivia, Brazil, Chile, Mexico, Peru and Columbia. Future research opportunities are discussed with emphasis on hydroponics, solid waste recycling and water treatment. A one-page bibliography is included. The report seems to overly present generalizations. A level of analysis does not unify the case studies that are mentioned. The most interesting passage discussed the need for research into the impact of urban agriculture on urban families. (Bohrt 1993)

Thus, it is seen that while overall activity in Latin America is haphazard and undocumented, urban agriculture in Cuba is organized and well documented but in many aspects an exception to the rest of the Latin American tradition. There may be lessons however, that are applicable to the situations found in the more typical Latin American urban context. Due to the fact that the structure of Cuban society is not comparable to any other society in Latin America, most of the transferable knowledge will come from the characteristics, motivations and benefits of the gardeners themselves and those of their immediate neighborhoods. The benefits of governmental support, even if that government is not as pervasive as the Cuban government, should hold lessons for other urban contexts in developing societies. It should not be necessary for there to be a "Special Period" to realize that participants can enjoy the benefits of the control, food security, contact with nature, and increased aesthetics that the Havana projects prove are possible. The particular case of research in urban agriculture in Latin America will be reviewed and summarized before the final summary of this work.

Europe

After UNDP report review, a work reviewed on European regional activities of urban agriculture is:

Garnett, Tara. "Growing Food in Cities: A Report to Highlight and Promote Benefits of Urban Agriculture in the UK." National Food Alliance/SAFE Alliance, 1996.

European activity in urban agriculture as presented by the UNDP Report could be summarized as various ways of "doing the right thing." It is linked to France and Germany's sustainable agriculture movement, Denmark's "co-housing" policies, Switzerland's consumer supported agriculture

movement and Italian cooperative association to the “green movement.” Norway and Austria have national food policies committed to self-reliance by focusing on the small sustainable producers. From necessity, Russian agriculture production is shifting from public to private and larger scale to smaller scale units. In 20 years between 1970 and 1990 the percentage of families engaged in food production has gone from 20% to 65%. The English system of “allotments” has spread throughout Europe. 80,000 gardeners tend municipal land in Berlin, 16,000 wait for an allotment.

There is great hope for the development of urban agriculture in the former communist countries as its strictly controlled urban planning was largely vertical, utilizing congested high-rises, leaving more open urban land than in urban North America or Europe. (UNDP 1996)

Most of the non-UNDP literature that was obtained on urban agriculture in Europe was focused on the British allotment system and its evolution since the time of necessity during WWII. The system today is extremely well organized by neighborhoods, communities and cooperatives. This entire aspect of urban agriculture is very extensively, and repetitively, documented. It could easily be concluded that there are more public relations press releases, self-help articles and guidelines for these allotment farmers than there is scientific support and advice for those cultivating the urban context for survival in all other parts of the world. This is not to infer that this aspect of urban agriculture in a relatively stable and developed society is trivial or incidental. Its contributions to the developed urban context are real and substantial, ranging from psychological and societal to environmental and economic positives. The extensive documentation of this aspect of urban agriculture will give an avenue for a much needed study of similarities between developing and developed urban agriculture. This type of study could lead to the understanding and planning necessary to aid a potential for continuity between the developing and developed stages of the urban context.

The UNDP Report coverage of urban agriculture in Europe briefly presents the following activity. The positive aspects of urban agriculture are seen as quite different in higher GNP countries from those in developing countries.

Food security in the former group is less of a concern for a number of reasons that include 1. The differing percentage of lower income family budgets used towards food costs, (1/5 to 1/3 in wealthier countries, 1/3 to 4/5 in poor countries), 2. More complete and stable food distribution systems in wealthier countries, and 3. Food is of higher quality and more accessible. The urban contexts in developed countries are less dense and have more available land for crops and animals, but they also have increased per capita consumption resulting in higher wastewater and solid waste volumes and associated greater potential environmental hazards. Traditionally governments have supported rural and not urban agriculture. Agricultural academics have only covered specialty applications such as hydroponics, aquaculture or poultry studies. The tradition of urban agriculture began to decline in the late 19th century and that decrease in activity accelerated after WWII. The 1970's, '80's and forward have seen a refocusing of interest. The UNDP covers some aspects of that resurgence.

Italy, France, Germany, Denmark, Switzerland and the Netherlands activities are all mentioned. The Netherlands' program is the most highly organized and supported and it developed as the Netherlands became the world's most densely populated and most urban country. It is surprisingly also a leader in agriculture production due to the government's support of urban agriculture. They have developed a “green core” that “features high-value crops, plastic shelters to stretch the season, marketing cooperatives, extension services, research centers, credit facilities, firm environmental controls and training.” In a planned process the Dutch agriculture industry developed a system “...that is the essence of urban agriculture everywhere: define the market and increase productivity.” The report also notes that the rebuilding of the former communist satellites presents an opportunity for the promotion of urban agriculture. Communist urban planning was concentrated in high-rise mini-cities that left more available open space than in the urban contexts of North America or Western Europe. This open land is available for urban agriculture expansion around the dense housing and business cores. All of the above mentioned benefits of urban agriculture could accrue from evolving farming activities as these economies expand. (UNDP 1996)

Tara Garnett in her work: "Growing Food in Cities: A Report to Highlight and Promote Benefits of Urban Agriculture in the UK." National Food Alliance / SAFE Alliance, June 1996, gives the history and practice of the English urban agriculture activity known as allotments. This work is seen as representative of much documentation of British activity and will be summarized chapter by chapter.

1.1 Why Grow Food? - A discussion of the process of getting back in touch with everything that food means to us. The answers to this question are adaptable to everyone's circumstances

1.2 Why in cities? - During the last 30 years 2.5 - 3 million people have left cities in part because the cities have become unsustainable. The residents of less than 2% of the earth's area consume 75% of its processed resources. The cities as social organisms are parasitic in the realm of resource production and consumption.

1.3 Why now? - During WWII 50% of manual workers kept gardens. This was seen as a patriotic action, that is, part of the war effort. British activities were a continuance of this tradition. In the southern hemisphere urban agriculture has grown since 1970 as a response to structural adjustment, civil strife, and increasing population. Urban agriculture became a survival mechanism. The percentage of urban populations participating in this activity ranges from 10% in North America to 80% in Siberia and Asia. Obstacles to urban agriculture in the southern hemisphere are catalogued as lack of access to land, water, fertilizer, credit and markets, and a lack of organization combined with governmental discouragement or ban.

2.1 Community Development -

A. Combating discrimination - Food growing helps participants regain pride in identity. For ethnic groups this improves their cultural identity by the growth of foods of their own culture. For the elderly, they can regain pride by sharing life

knowledge that they have in growing food and by re-establishing their participation in society.

B. Preventing Crime - Pride of neighborhood, increased street presence, and increased green spaces affect the quality of life around housing and school areas where it is practiced.

2.2 Economic Development - Urban agriculture creates local goods and services and gives increased local control of the local economy. Studies have shown that urban agriculture is not a threat to rural agriculture due to differing focus and scale of operations.

2.3 Education - Urban agriculture can have a positive educational impact as part of cross curriculum themes and informal (non-classroom) curricula.

2.4 Environment - The positives of urban agriculture for environmental issues include increasing biodiversity. While current agriculture practices and research can reduce the number of plant species, urban agriculture can restore more diversity into some areas of the city and preserve "niche" varieties. Urban agriculture has the potential to recycle household waste, reduce overall transportation of consumables and reliance on the car for consumers.

2.5 Health - Urban agriculture can improve the health of participants in three ways. Improving diets, encouraging physical activity and promoting mental health. Ignorance is found to not be the reason for poor health amongst the poor. They often rely on small shops that carry limited and more expensive produce. Urban agriculture can offer alternatives to these constraints. The activity of farming can change the perception of physical activity into one of a form of leisure. In the mental health arena, gardening is recognized as a positive activity for dealing with stress.

2.6 Leisure - Urban agriculture has the potential to promote volunteering, in some instances generate

sustainable tourism and aid in the development of arts and crafts based on local products.

2.7 Sustainable neighborhoods - Urban agriculture has the potential to diversify parks and other green spaces as underused areas are turned over to food growing. It can also re-generate housing developments as most of the surrounding open land is lawned over. Gardening is more productive and develops a sense of pride and ownership. In the larger scale the 'green belt' planning model can be seen to encourage urban sprawl and a move from belts to wedges is supported.

3.1 Issues affecting food growers in cities - A pressing question is who owns the land that is available for farming. Even in the developed societies of England and Wales millions of properties are not registered. Often only properties that are sold are registered. About 5% is derelict. Another major issue is contamination. Lead is the most common and is the legacy of leaded fuels in cars. Lead is not taken up by the roots of a crop and can be washed off if it is in the form of dust stirred up from contaminated earth. Rural farming is not free from contamination as there is a history and legacy from pesticide usage. If the urban context is polluted a non-food crop (hemp) is an option. Water is another issue raised with urban farming but depending on what activities it is replacing and the techniques of the urban farming, overall usage can be less with the practice of urban agriculture.

(Garnett 1996)

The thoroughness of Ms. Barnett's work is representative of a number of works on British and European urban agriculture practices. They are often written in a positive and independent spirit, that re-enforce the aspects of city farming that are counter to the characteristics of a feared autonomous and one-dimensional society and economy. A larger number of other published articles are focused on advice, self-help and organizational theories for the established city farming activities and illustrate the mainstream acceptance of this activity in these geographic areas.

North America

After UNDP report reviewed, works reviewed on North American regional activities of urban agriculture are:

Wilson, Charles. "Asphalt Eden: Fruits and Vegetable Cultivated, Sold, and Consumed in Cities give a new Meaning to Urban Growth." *Preservation*. Vol. 54 No. 3. May/June 2002. pp 58-65

Brown, Catherine H., Anne Carter and other contributors. Urban Agriculture and Community Food Security in the United States: Framing from the City Center to the Urban Fringe. Venice, CA: Community Food Security Coalition. October 2003.

Urban agriculture in North America is probably more varied and less proportionally documented than the activities in any other region of the globe. It is more varied because it contains some aspect of the household subsistence activities of stressed economies, some degree of planned governmental involvement at the municipal, state and federal levels that is indicative of formal support of the general benefits of farming in the urban context, and instances of urban activities that can only bloom in a developed and stable economy and culture. It is possibly less proportionally documented because of an academic perspective that many of the actualizations of urban agriculture in North America are a form of leisure activity. An exception to this perception is the work of Prof. David Clawsen of the University of New Orleans documenting the Vietnamese Community in eastern New Orleans. This work will be reviewed below in the section on Who are Urban Farmers.

At the subsistence level there are few examples of squatters on public or illegally utilized private land. There are though many examples of city home gardens that are necessary to the food acquisitions of poor families. These activities are largely not documented. There are also community gardens supported by municipal entities on either public or donated private lands that have a range of necessity to the participants. Even when these are leisure activities they are part of the urban agriculture trend and provide benefits to the population in general. These activities have often been highlighted in newspaper and magazine coverage as counter-culture or feel-good exceptions to the urban norm.

The researcher has not witnessed any examples of squatting cultivation of roadsides or drainage ditches or other peripheral public lands in the urban context, but has noticed in the surrounding rural areas sugar cane being grown on utility right-of-ways. In the urban context of New Orleans, crawfish have been seen to be harvested by passers-by from public drainage areas abutting local interstates and highways. Documentation of the economic or cultural aspects of this tangential manifestation of urban agriculture was not found nor of the associated urban fishing, crabbing and shell fishing that is often observed in cities with substantial water assets.

The next level of organized urban agriculture would seem to be the community garden. Initially, these activities may have been on abandoned urban lots, often after the demolition of a blighted building, but as the benefits for the communities were better understood, municipalities began officially supplying land through various cooperative mechanisms. These activities have been highlighted in feature press articles but academic documentation of the practice, its characteristics and impacts, was not found.

Typical of the highlight articles found was one by Charles Wilson in the May/June 2002 issue of Preservation, the magazine of the National Trust for Historic Preservation, titled

security needs is discussed as is who is raising food in the cities and the types of urban farms. Challenges to successful urban agriculture programs and the policy changes necessary to promote urban agriculture are presented. Specifics are given in the areas of infrastructure changes, education and training, research, and changes in the attitude of planning professionals. If North America and the United States in particular are to be the proving ground where urban agriculture gets integrated into the modern city, then this paper is a guide to the initiation of that transformation. (Brown, Carter 2003)

The UNDP report ends its presentation of regional activity with a Summary: Comparisons across Continents. It notes the dramatic growth of urban agriculture in developing countries. Activity is noted as most extensive in Asia, but as an established activity, growth and change is slowest. Municipal and national government support is greater in Asia than Africa or Latin America. Urban Agriculture in Africa is less formally organized, but was the most extensively documented during the preceding decade. Latin America is presented as the least advanced continent. From a developmental perspective the UNDP found that:

“In most countries, urban farming resulted from the initiative of enterprising farmers who saw the market opportunity or responded to the possibility of improving family security. In only a few cases did it develop through government foresight. In fact, in most countries urban agriculture receives little official support; in many countries, it is still restricted.” (UNDP)

Review of Literature on the General Characteristics of Urban Agriculture

The above section concluded Part One of the UNDP report. Part II: What is Urban Agriculture, Part III: Benefits, Problems and Constraints and Part IV: The Future of Urban Agriculture, make up the rest of this UNDP report, exclusive of appendices. The subjects covered in Parts II through IV will be reviewed in this section reviewing literature that addresses the general characteristics of urban agriculture. Again the information in the UNDP report will be reviewed and related research by other authors will be reviewed and

placed with similar UNDP information. Two reviewed in this section are:

“Urban Food Production- Neglected Resources for Food and Jobs.” Hunger Notes: a Newsletter of World Hunger Education Service, vol. 18 (2), 1992.

Koc, Mustafa, ed., For Hunger-proof Cities: Sustainable Urban Food Systems, Ottawa: IRDC. 1999.

The regional researchers reviewed above extensively described many of the general characteristics of urban agriculture. The works in this section targeted characteristics across regional boundaries. Wider reading over time has supplied a better understanding of the history of urban agriculture and a condensation of this will be presented here.

In his work, Civilizations: Culture, Ambition and the Transforming of Nature, Felipe Fernandez-Armesto notes that farming and city life have long been “...conventional ingredients of a check-lists of civilization...” V. Gordon Childe is cited as having reduced civilization to “mean little more or less than settled life: a state of society which ensued from two ‘revolutions,’ of which the first was agriculture (man’s control over his own food supply) and the second was ‘urban.’”(p.18) Fernandez-Armesto proposes civilizations have one trait in common: “...their program for the systematic refashioning of nature.” In many instances (but not all, an important author’s point) the marriage of intensive farming and city life is seen as seminal. He dispenses with the notion that cities are defined economically, by pointing out that for most of history “cities have been part of a wider countryside and ...absolutely dependent on agriculture.” (p.29) He later discusses “a particular kind of agriculture, a form of agrarian mass production specializing in one or two grains...that represented an extreme form of the civilizing urge. It supported teeming urbanized, highly regulated societies: human beehives, the tyranny of collective objectives.”(p.174) A case study presented is Jericho, “the oldest city of the World,” tenth millennium B.C., that used selective planting of wild grasses on the alluvial strip around the ten acre city. (p.180) Other case studies cite the intensive farming supporting the older North American society-cities of Tiahuanaco, with forty thousand occupants fed from raised beds producing thirty thousand tons of potatoes

annually, and the “floating gardens” of Lake Texcoco/Mexico City found when the Spaniards arrived. (pp.236-246) ⁴ (Fernandez-Armesto 2001)

Fernandez-Armesto’s work is an excellent analysis of the relationship between civilizations and the transformation of nature in general; and in particular it aids this research with a history of the alliance of agriculture and cities. This alliance was often, but not exclusively, the precursor of greater transformations of nature by society and the expansions of civilizations. Many urban agriculture works, including the UNDP report, reproduce an antique map of 1649 Aachen, Germany. The plan of Aachen, 1649, shows a medieval walled city with extensive farming inside and outside of the city walls. A part of the history of urban agriculture is its use by ancient civilizations to feed dense city habitats. (UNDP 1996)

The industrial revolution changed the life in medieval and renaissance cities from crowded, unplanned and filthy living, to an exponentially increased level of oppressively unhealthy and environmentally damaging conditions. Previous city planning had been motivated by the egos and motivations of emperors and kings, but reaction to sudden and overwhelming industrial urban blight led to 19th century speculation on utopian cities. One of the most influential of these urban thinkers, whose work is relevant to our inquiry, was Ebenezer Howard, whose Garden Cities of To-Morrow, was published in 1902 and previously

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programs that incorporate agriculture, horticulture, aquaculture and other manifestations into the designed urban context.

The Fall, 1992 issue of Hunger Notes: a Newsletter of World Hunger Education Service, contained eleven articles on “Urban Food Production- Neglected Resources for Food and Jobs.” The names of some of the contributing authors are familiar, Jac Smit and Annu Ratta of The Urban Agriculture Network (TUAN) and contributors to the UNDP report, Isabel Wade, who has a reviewed work in the suggested library above, Pablo Gutman, on Latin American activity and Daniel Maxwell, who has a number of prominent papers about African urban farming phenomena. These eleven articles with a brief literature review are an adequate, concise overview of much of the general characteristics of developmental urban agriculture. Irene Tinker’s intro article, “The Invisibility of Urban Food Production,” states: “The purpose of this issue is to persuade policy makers that urban food production not only exists but is of growing importance to increasingly congested cities.” Thus the tradition of including food production in the urban planning process is re-introduced as a proposed meliorating influence in the sanitized post Modernism search for solutions to city living,

“Food Production and Under-nutrition in Third World Cities,” by David Drakakis-Smith delineates the nutritional problems of the urban poor and examples where urban agriculture has supplied some degree of food security separate from the cash economy. He proposes that: “A coordinated policy on the urban food supply system is desperately needed for the achievement of national food security in Third World nations.” The articles by Ratta and Smit, Maxwell and Sally Etheiston’s: “Food Costs in Cities,” show that by 1992 a good deal of documentation had been done on what activities defined urban agriculture in some developing urban contexts and that there was an earnest belief that these activities are imperative for the survival of the urban poor. Laura Lawson’s article: Gardens in the San Francisco Bay Area as Urban Landscape,” presents how urban gardening activities are part of the modern developed urban context. A range of home gardens, coop lots, community markets and commercial enterprises are presented. Its silent benefits are enumerated and notes:

“Productive gardening and food harvesting occur in the urban landscape whether or not planners, designers, and governmental agencies ignore the fact or denigrate its importance.” This author will be revisited later.

This issue of Hunger Notes ends with a “Research Review: Bibliography,” by Susanne Freidberg of the University of California, Berkeley. Her findings on the literature of this field state: “recent research on urban agriculture is distributed very unevenly. We find numerous studies from southern and eastern Africa and East Asia but only a scattered references from Latin America or other parts of Africa and Asia.” Most activity documented in her reviewed studies is seen to be engaged-in due to family necessity either directly for food, extra cash or both. The varied involvement of state agencies was noted, also that state tolerance does not mean state support, and if the reduction of hunger is a concern and urban agriculture is to be part of the solution, then access to land and water must be assured by policy makers and the state. Of the literature, she feels “the current state of research ...points...to the need for further research. There is a great need for baseline, comparable, data from all parts of the world.” This series of articles is a concise presentation of the general characteristics of urban agriculture defined from a developmental perspective. (Hunger Notes 18:2)

An extensive work published in 1999 makes progress in a number of these research shortcomings. For Hunger-proof Cities: Sustainable Urban Food Systems, edited by Mustafa Koc, evolved out of the 1997 IRDC Conference on Sustainable food Systems, Ryerson Polytechnic University, Toronto. The two hundred plus page publication includes ten pages of abstracts that are very helpful determining which of the 28 articles focuses on any particular area of study. The need for baseline, comparable data from around the world is left unanswered but anecdotal and descriptive studies from a wider variety of urban contexts are presented under 8 chapter headings. The 8 organizational headings, each with at least three studies under them, are as follows:

- The Concept of Urban Food Security, Local Food Systems,
- Urban and Community Agriculture,
- Accessibility and Urban Food Distribution,

- Ecological and Health Concerns,
- Engendering the Food System,
- The Politics of Food and Food Policy
- Toward Food Democracy.

These articles are both specific and wide-ranging, and present a very accurate summary of the core activities of urban agriculture. For this reason, it is part of this researcher's 15 recommended readings for an Urban Agriculture library. (Koc 1999)

The following breakdown of general characteristics of urban agriculture is a way of organizing research in the field that differs from the regional analysis presented in Section 4 B of this review. Works that have been previously reviewed and fit into these categories will be mentioned but not re-reviewed. Research from the UNDP report will be presented first and then that of other authors where applicable.

Who Are the Urban Farmers?

After UNDP report review, works reviewed on the characteristics of urban farmers are:

Hochstein, Rolanine and Jeff Dulles. "Partners in Growing: When young and old get together in a City Garden, beautiful things grow." Parents Magazine. 69, 7:134, 1994.

"Fresh Food Cheap (All Year Long)." Organic Gardening Magazine, 1981

Airriess, Christopher A. and Clawson, David L. "Vietnamese Market Gardens in New Orleans." The Geographical Review 84 (1994: 16-31).

The UNDP report points out the differences between two groups of urban farmers: low income farmers and mid and high income farmers. In most countries of developmental interest to the UNDP, "...urban agriculture is dominated by small producers achieving food security and earning income for their families. However, the small number of large producers-domestic private and public corporations and multinational agribusinesses- produce a significant share of the total value of urban agriculture,..." The differences of these two groups are not just of size, but also of the product farmed and of farming systems. Besides these two groups, participants are noted to include

agribusiness, farmers' cooperatives and special groups: women, migrants and refugees. A chart is included presenting the prevalence of farming in 8 African, 3 Asian, one Europe (Russia), and one North American (U.S.) Countries. The percentages range from 25% in the U.S. to 80% in the city of Port Moresby in Papua New Guinea. The sections on women, immigrant and crisis farmers are brief and highlight areas that need substantially more focus and attention. (UNDP 1996)

The already reviewed works of the Asia Vegetable Research and Development Center (AVRDC) and that of Angela L. Moskow on Cuba are both regional works that focus on the nature of the participants of urban agriculture in their regions. Also human-interest articles such as "Partners in Growing: When Young and Old get together in a City Garden, Beautiful Things Grow", Parents Magazine, and Organic Gardening Magazine, "Fresh Food Cheap (All Year Long)", highlight some of the participants in North American activity but not in an academic format. Urban Wilds by Cleo Woelfle-Erskine, which will be reviewed below in the section on work found outside of academic urban agriculture, introduces an assorted cast of activist urban farmers. Another source of information on the participants of North American city farming is the publicity materials of community garden and city farmers' market organizations. An example from the Crescent City Farmers Market is typical, listing its mission "...that initiates and promotes ecologically sound economic development for individuals, families and small business in the food and agriculture sector in the Greater New Orleans region." Donors names, market locations and times, mentors, and impact are promoted.

Academic analysis of the characteristics of participants in urban agriculture is one of the main areas of need for increased emphasis. Much research groups farmers according to income, or land ownership, but in-depth recording of their backgrounds, skills, cultural attributes, age, gender, family status and other characteristics is largely lacking. An impressive exception was found in the field of cultural geography in the works of Christopher A. Airriess and David L. Clawson. Two articles were found documenting the urban agriculture activity of the Vietnamese community in New Orleans, LA. One of these: "Vietnamese

Market Gardens in New Orleans,” in The Geographer Review, focuses on the farming practices of the Vietnamese enclave living near the levees of eastern New Orleans. It thoroughly documents plot sizes, crop types, cropping systems, garden typographies and technology inputs and could have been reviewed in the following section on where and what is farmed, but there is included around and in these topics enough cultural information that insight is given as to the unique characteristics of these farmers. The second article from 1989 by the same authors: “Versailles: A Vietnamese Enclave in New Orleans, Louisiana,” focuses much more clearly on the background cultural and demographic characteristics of this urban agriculture community. (Airriess, Clawson 1994, 1989)

This type of specific focus on the nature of the participants in individual communities of city farmers is what is needed to begin to develop a baseline of demographics that is missing across regional variations of urban agriculture. Even as a unique and thoughtful investigation of the cultural aspects of this activity, this type of research would need to be reduced to a uniform statistical output to allow comparisons with researches in other areas of the world. An interesting research question arises as to whether the investigations of Airriess and Clawson document North American or Asian urban agriculture activities. Is the soil or the culture definitive? Baseline data from both of these environs could aid in a debate of this question.

A good source for gaining an understanding of the activists involve in North American community gardens is the website of the Green Guerillas at <http://www.greenguerillas.org>, a representative group that evolved out of the Bowery Houston Farm and Garden. They provide “an array of services to more than 200 grassroots groups each year.” Since 1973 they have had an ongoing effort to sustain a strong network of community gardens. A source for community gardens across the United States is: American Community Garden Association (ACGA).

Where and What is Farmed

After UNDP report review, works reviewed on the characteristics of where and what is farmed are:

Wade, Isabel, “City Food: Crop Selection in Third World Cities”, San Francisco: Urban Resources Systems, 1986.

Bakker et al. Growing Cities Growing Food: Urban Agriculture on the Policy Agenda, 2000

The UNDP 1996 Report dedicates Chapter 4 to Where is Farming Found in the City and Chapter 5 to Producing Food and Fuel in Urban areas. Wide ranges of examples are given in each chapter highlighting the variety of attitudes and perceptions about urban agriculture. As an example, the World Bank is reported to label the considerable open land in greater Moscow as vacant, when most of it is in cultivation and helping to sustain the urban population after the implosion of the state-run food supply system. The cities of most developing countries contain urban agriculture almost everywhere. The report goes on to catalogue the types of spaces used: around houses, rooftops, community spaces, surplus public and private spaces, roadsides and right-of-ways, streams and flood plains, water bodies, wetlands, and steep slopes. The types of access and duration of use are delineated noting that these can affect both the farmer’s choices of crops, care of the land and level of planning. Examples of permanent, long-term and short-term use are given as well as various rent arrangements and tenure. (UNDP 1996)

The Daniel Maxwell work on urban agriculture in Kampala, Uganda, that was reviewed in the section on African literature is an example of the very extensive and thorough case study analysis that is needed across more global situations. This would begin to form the baseline of information that has been noted as being lacking in the field. Maxwell covers land access and tenure, theory and policy, food security and nutrition, and documents crops farmed. He also investigates household engagement, income and division of labor. If Maxwell’s format for analysis of who, what and where and why, were replicated across the world’s 100 largest urban centers, a large step forward would be taken in unifying the discussion of urban agriculture.

“City Food: Crop Selection in Third World Cities,” by Isabel Wade of Urban Resource Systems, is a 1986 work that documents crop selection on a wider basis than Maxwell’s Kampala research. It is valuable for its early analysis in the

field and as an initial baseline that needs to be extended over time.

Growing Cities Growing Food: Urban Agriculture on the Policy Agenda, (Bakker et al 2000) is an edited book of papers on urban agriculture, which grew out of an October 1999 international workshop in Havana, Cuba, that is available for sale or download off of the ruaf.org website. The first thematic paper in this book by Luc J. A. Mougeot, "Urban Agriculture: Definitions, Presence, Potentials and Risks," is a thorough overview and presentation of the precepts and perspectives of urban agriculture. He discusses a range of research in the field and points out potential and handicaps. There is an extensive reference bibliography that can be mined for other works in areas of specific interest. Case studies are introduced and comparisons are made across case studies. A concluding point is made that most recent policy analysis of urban agriculture has come from agriculture circles with a noticeable lack of analysis from urban planning sectors. Mougeot feels that the later is essential for integrating urban agriculture into the urban economic and ecological system. He presents a work by Soonya Quon that surveys this integration of urban planning and urban agriculture. The Soonya Quon work will be reviewed in the section on urban agriculture and urban design, where the paucity of resources on the integration urban agriculture into urban design is discussed. This Thematic Paper #1 is included in the list of recommended library readings because of its balance of overview and specifics. The content of the entire book should be reviewed for areas of interest.

Producing Food and Fuel in Urban Areas

After UNDP report review, works reviewed on the organization of producing food and fuel in the urban context are:

Marulanda, C., J. Izquierdo. La Huerta Hidroponica. published by FAO in 1991

Skelsey, Alice. Farming in a Flowerpot: How to Grow Vegetables and Fruits in Small Containers. New York: Workman Publishing Company. 1971.

Stevenson, Mike and Peter. Farming in Boxes: One way to get started Growing Things. New York: Charles Scribner's Sons. 1976.

Chapter Five of the UNDP report, Producing Food and Fuel in Urban Areas, essentially proposes an organizational structure for activities in urban agriculture as it varies from continent to continent. Activities are divided for discussion into five farming systems drawn from the authors' field observations. These are: aquaculture, horticulture, animal husbandry, agroforestry and a grouping of other urban farming activities. The production of other items besides food is emphasized. These include fuel, medicines, fodder, compost, hides, insecticides and flowers. Some products are noted to favor certain scales of production and capital investment; therefore to some degree, delineating who participates in what production. Aquaculture is not just fish and seafood production, but vegetables and aquatic plants raised in water. Horticulture, production of vegetables and fruits, exists across all continents. Household horticulture is presented and container and soil-less horticulture are given special emphasis. The extremely adaptable system of hydroponics is presented under soil-less horticulture. The advantages and constraints are briefly discussed. Animal husbandry, the raising of livestock in cities, varies in type from country to country according to needs and culture. Species raised include chickens and other poultry, small livestock - rabbits, guinea pigs and hybrid members of the rat family, and large livestock - sheep, pigs, cows, goats and cattle. There is often a main product of meat and by-products that include milk, eggs, fur, feathers and dung. The problems of urban livestock are discussed. Agro-forestry is promoted for its general environmental contributions. Wood is the primary fuel for cooking and heating in the developing world, resulting in the de-forestation of many urban and surrounding areas under subsistence pressures. Programs of agro-forestry are seen as having the potential to reverse these trends and provide further ecological benefits to the urban context. From the examples given, it can be surmised that programs in this area need substantial organized effort, capital and commitment. Developmental agro-forestry can benefit the individual and the city at large, but would be difficult for the subsistence individual to initiate. The other urban farming activity presented in Chapter Five may not fall into the above four categories, but are considered by the

UNDP report to have the potential to be economically significant. Snails, ornamental fish and straw for weaving are mentioned as *exotica* of urban agriculture, but three cultivation systems are discussed in detail: apiculture, vermiculture and mycoculture. Apiculture is beekeeping and the benefits include honey, wax and the localized promotion of biodiversity through pollination. Vermiculture is worm farming. They can produce silk, larvae used as fodder, or be an accelerant in the compost process. Mycoculture is the raising of mushrooms, which can be accomplished in cellars and sheds using little access to land or water. Techniques for production have transferred from Asia and Europe to Latin America and Africa. Beverage and medicinal crops are also listed as urban farming activities. Grapes, hibiscus, palm, tea, coffee, sugar cane, qat, matte, beer (from bananas) and distilled spirits are listed as beverage crops. Benefits include processing and distribution employment. Medicinal and ornamental horticulture are the final specialized areas of urban farming detailed by the UNDP report. Both are widespread and hold potential for steady income. The lack of documentation and encouragement of traditional medicinal plants and products is a particularly distressing shortcoming of research in urban activities that will be discussed further. (UNDP 1996)

In the structure of the UNDP report, Chapter Five is an organizational proposal for the activities of urban production systems. Most of the activities discussed in the five farming systems have been also documented by other researchers, and many of these efforts were presented in other sections of this literature review. The techniques of raised-bed, hydroponics and other intensive farming processes are promoted in literature available from a number of governmental and developmental agencies. La Huerta Hidroponica by C. Marulanda and J. Izquierdo published by FAO in 1991 is an example of this genre. As a self-help publication, it is also available as an audio-visual format comprising nine classes available in both Spanish and Portuguese. Container horticulture has also been encouraged through governmental agency literature, but because of its adaptability to individual situations, its promotion has also found an outlet in commercial publication. Two that were found and reviewed will be representative of a very large number of self-help guidebooks for intensive farming.

Farming in a Flowerpot: How to grow Vegetables and Fruits in Small Containers, by Alice Skelsey is both informative and encouraging. Techniques and required materials are specified as well as the characteristics and needs of over 20 vegetables and fruits. Another work from the early 1970's movement to return to gardening and self-help projects is Farming in Boxes: One Way to get Started Growing Things, by Peter and Mike Stevenson. In simple and clear photos and drawings it shows the construction, preparation and use of box containers, compost bin and a sheet plastic greenhouse. Both are reflective of a desire of people in developed cultures, mainly the U.S.A., to re-establish contact with the process of food production, even if it must be accomplished in a condensed urban version. Four other commercial publications that are either more general than the area of intensive container growing or more philosophical or lifestyle oriented than these two self-help books, will be reviewed in the section below on literature found outside of academic urban agriculture.

Organizations Involved in Urban Agriculture

After UNDP report review, works reviewed on the organizations involved in urban agriculture are:

Kaufman, Jerry, Martin Bailkey. Farming Inside Cities: Entrepreneurial Urban Agriculture in the United States. Lincoln Land Institute Working Paper. Cambridge, MA: Lincoln Land Institute. 2000.

Urban Food Production: a Survival Strategy for Urban Households, Report bulletin from workshop on Urban Food Production sponsored by the Regional Land Management Unit (RELMA), Nairobi, Kenya. nd.

Sommers, Paul, and Jac Smit. CFP Report # 9: Promoting Urban Agriculture: A Strategy Framework for Planners in North America, Europe and Asia. The Urban Agriculture Network (1994)

Chapter Six of the UNDP report, Which Organizations Influence Urban Agriculture, discusses and categorizes organizations active in the field. Because urban activity has such a variety of manifestations, the urban systems with which it can interact are numerous. It can have issues of conflict or support in planning, land use, infrastructure, transportation, waste management, health and nutrition, and

the economy and livelihood. The UNDP report groups the organizations influencing urban agriculture into five categories: 1. Farmers associations, 2. NGO's and other support entities, 3. Local, national and other public authorities, 4. Independent and university research centers and other similar institutions, and 5. International developmental agencies. It then it lists miscellaneous other stakeholders. These five categories are analyzed as to the role they play in urban agriculture. It is noted whether either their primary or secondary role is to regulate, facilitate, provide resources or inputs, or partner in the farming activity.

These five types of organizations, plus some miscellaneous stakeholders, impact urban agriculture to differing degrees both independently and in partnerships. The general impact of each, both positive and restrictive, is presented with case studies for illustration. The fact that governmental entities might be supportive in one regional context and repressive in another to the same activities is noted. Among other stakeholders it is proposed that the small-scale and/or informal urban production activities operate between two well-established formal economic sectors: agricultural inputs and marketing. Both are oriented towards larger players. Similarly, supply, credit, processors and market entities all are geared to deal with operations of larger scales. The past lack of collaboration between all of the types of organizations and stakeholders is lamented by the UNDP report. (UNDP 1996)

Next will be presented briefly some organizations that were encountered during the course of this research but that have not been discussed in other sections of this review. The selection is random as no effort was made to seek out organizations representative of each of the groupings of the UNDP report. This is an area in need of current research and data, but it is determined to be beyond the scope of this review of the literature on urban agriculture.

The Lincoln Institute on Land Policy publishes working papers that address and forward discussion on one or more of the items on the Lincoln Institute's current agenda. The three foci of the program at the time of research were: taxation of land and buildings; land markets; and land as a common property. A 2000 paper by Jerry Kaufman and Martin Bailkey, Farming Inside Cities: Entrepreneurial

Urban Agriculture in the United States, is of interest to our review discussion. This 85 page working paper is a very thorough evaluation of attempts to turn urban agriculture in the United States into profitable businesses. The variable and unstable relationship between vacant city land, entrepreneurial urban agriculture and the local institutional climate is presented as primary to success of local ventures. These three are visualized as a wobbly stool and the goal of the study was to see if insights could create a sturdier stool where more vacant land is utilized by more successful urban agriculture in the context of a more supportive institutional climate. An attempt was made to understand the extent and characteristics of entrepreneurial urban agriculture, assess obstacles to its practice and identify ways to overcome these obstacles. An extensive number of phone, in-person and on-site interviews were conducted. The study discovered and analyzed seventy entrepreneurial urban agriculture projects operating. (2000 publication date) In these, the diversity of entrepreneurial urban agriculture in the United States was discovered and is presented through various case studies. Community development corporations (CDC) are represented as catalysts for urban agriculture with a great deal of potential for the future. The large-scale CDC of Isle, Inc in Trenton, New Jersey is analyzed as using community gardens to fund and stabilize its other social services. Twelve pages of suggestions are drawn from the interviews and case studies. Suggestions are made for: overcoming community concerns, to advance the cause of entrepreneurial urban agriculture, for local, state and federal government to assist entrepreneurial urban agriculture, and for foundation and CDC action to assist entrepreneurial urban agriculture. In summary, this report emphasizes the *vision* and *reality* of entrepreneurial urban agriculture that it drew from its interviews and case studies. The main features of vision were that urban agriculture is on the upswing, and imagined the wonderful world if city folk could look out on bountiful acreage instead of trash filled lots and boarded blighted houses and the fact that the positive attributes of agriculture can be an integral part of a city's revitalization. The *realities* were broken into two groups: sobering and hopeful. The sobering *realities* of promoting city farming: include urban agriculture enthusiasts being outnumbered by skeptical citizens, for-market projects being under funded, city officials do not see urban agriculture as a "highest and best use" of their tax rolls and the general opinion that food-

growing is a rural activity. The hopeful *realities* include: “a diverse array of for-market city farming ventures exist...,” “pockets of support of for-market urban agriculture ventures were found among ... government officials, small amounts of working capital are being found, urban agriculture enterprises develop localized positive opinions, and a small number of projects are showing a profit while others provide social, aesthetic, health and empowering benefits.” (Kaufman, Bailkey 2000)

This working paper includes five pages of references that could be mined for further information specific to entrepreneurial urban agriculture in the United States and has a nine page appendix listing current or planned inner-city entrepreneurial urban agriculture projects in the U.S. and Canada.

A 1998 paper titled Urban Food Production: a Survival Strategy for Urban Households, a report of a workshop on East and Southern Africa held 3-5 May 1998, gives insight into some of the current organizations researching urban agriculture in the African context. Participants in the workshop included: the Regional Land Management Unit (RELMA,) Nairobi, Kenya, the Mazingira Institute of Nairobi and PROP, Programme on Population and Development, Department of Sociology, Lund University. The focus of the workshop was limited to urban food production (UFP) by households. Participants in the workshop included representatives of the Ministry of Agriculture of Ethiopia, of the Dept. of Anthropology of Stockholm University, of the City Engineer’s Department of Kimberly, South Africa, of the Urban Vegetable Promotion Project of Tanzania, of the Department of Town and Regional Planning of the University of Sheffield, and representatives from the fields of Agriculture Education, Sociology, Environmental Sciences, and Geography. These diverse participants focused on UFP as an “expression of poverty under which many urban people live.” Case studies are presented in the report from the six countries where RELMA operates, Zimbabwe, Uganda, Tanzania, Kenya, Ethiopia and Botswana. The role of UFP in food security and urban household survival strategies are presented and research and policy priorities are delineated. This is a very

good, yet brief, report from a number of organizations representative of those working in the African context.

Cities Feeding People Series Report 9 (CFP 9), Promoting Urban Agriculture: A Strategy Framework for Planners in North America, Europe and Asia, by Paul Sommers and Jac Smit, “proposes a planning framework meant to encourage cities to incorporate UA activities in to existing programs, or initiate UA programs.” From an organization at the center of researching urban agriculture, the Cities Feeding People (CFP), comes a brief presentation of urban agriculture examples from Asia, Europe and North America, its various significance, purposes and adaptability. The many and varied benefits of urban agriculture activities are given and ways that these activities can fit into existing urban improvement programs. Activities discussed for inclusion of UA are environmental improvement, solid waste management, crime prevention, health care, child nutrition programs, redevelopment/inter-city enterprise zones and education. This report not only gives numerous statistics and interesting case studies of urban agriculture actualization but also provides guidance for urban entities to initiate, incorporate or expand urban agriculture in their particular situations.

Benefits, Problems, Constraints and the Future of Urban Agriculture

After UNDP report review, works reviewed on the benefits, problems, constraints and future of urban agriculture are:

Lazarus, Chris. “Urban Agriculture; a Revolutionary Model for Economic Development,” New Village. Issue 2. 2000.

Smit, Jac. “Urban Agriculture Progress and Prospects: 1975-2005.” Cities Feeding People, Report #18, 1996. Ottawa: International Development Research Centre, 1996.

The UNDP report on Urban Agriculture is organized in four parts. This review up to this point has reviewed Parts I and II, and other literature associated with the subject areas of those first two parts. Parts III and IV of the UNDP report

will be covered in this section as will be aligned work of other researchers. This condensation occurs because coverage of these aspects is often included in works that have been placed in earlier categories. The benefits, problems and constraints of urban agriculture are rarely discussed outside the context of a specific region, culture or technique that better falls elsewhere in this review.

The UNDP report presents a graphic from the Urban Agriculture Network to illustrate the benefits of urban agriculture. The graphic shows three intersecting circles of Well-being, Environment and Economy. Each circle has four or five bullets that breakdown the intersecting features of those areas. The report makes it clear that these are benefits to both the participants and the residents in general of towns where urban agriculture is practiced. The Well-being circle includes food security, nutrition, health, cleaner environment and community solidarity. Well-being individual benefits are seen as a springboard for benefits for society at large. Low-income farmers are able to make positive social contributions that have a cumulative impact. The Economy circle includes jobs, economic base, less poverty, more enterprises and work for women and other disadvantaged groups. The UNDP report lists the economic aspects of urban agriculture as receiving little specific attention. Their focus is developing countries and in these they observe economic analysis of urban agriculture as being not distinct, but a subdivision of either rural agriculture, the informal economy or some temporary phenomenon. They see it as a substantial positive force in its own right in terms of income generation, expanded agricultural sector and land use economics. The Environmental circle includes the benefits of conservation of resources, disaster mitigation, sustainable communities and waste management. The one that best summarizes the environmental benefits of urban agriculture would be the concept of sustainable communities. The UNDP report feels that urban agriculture can help cities make a transition from an open-loop system where resources flow in and garbage out, to an economic closed-loop of re-use and recycling that both lowers resource dependence and lowers waste disposal costs. Reading this report one can see an irony of the current global economy in which developing urban contexts have the potential for more sustainability than the rural agricultural sector due to the potential of urban agriculture to enable a closed-loop resource cycle. The

section on disaster mitigation is particularly resonant after hurricane Katrina and the multi-faceted discussions of rebuilding New Orleans. Aspects of the rebuilding discussions have included the urban use of zoned wetlands and green spaces as natural buffers and drainage containment holding basins. Urban agriculture has not made it into the discussions for these green spaces, but the potential exists. Techniques that lessen erosion, flooding, unstable soils, landfill and wastewater contaminants are presented briefly. Urban agriculture is also seen to have the power to locally mitigate the effects of social upheavals. (UNDP 1996)

All of the works reviewed in earlier sections of this research, no matter what their primary focus was; cover urban agriculture benefits to some degree. One of the shortcomings of research throughout urban agriculture is the lack of studies centered on one aspect, benefit, technique or activity and then studied, documented and compared across all urban regions.

“The common perception in Africa and Latin America is that urban agriculture is marginal, temporary and archaic. Some regard it as an activity that is actually harmful to farmers, consumerism, the environment, the urban land economy and the city’s appearance.” (UNDP p.197)

Thus begins the UNDP chapter on problems related to urban agriculture. Specifics, mostly of poor implementation of urban agriculture activity, are given. A comprehensive chart from the Urban Agriculture Network, TUAN, that lists 27 problems associated with urban agriculture, is presented. The problems are grouped into five categories of concern. They are: Health, listing problems of diseases transmitted or contamination, Environment, with problems of resource depletion and pollution, Social, with concerns for women and children in the activities, Urban Management, with land use and monitoring concerns and Other problems being two, attractiveness and safety. A final editorial paragraph is included noting that urban farming is illegal in most African and Latin American cities. A proposal is made to legalize it in order to regulate and organize it. This regulation and organization alone will reduce the areas of problematic implementation noted in this chapter.

Chapter Nine of the UNDP report presents constraints on urban agriculture in the developing countries of the world. They are grouped in five categories: socio-cultural constraints and institutional constraints, constraints on access to resources, inputs and services, special risks of farming in the city, processing, marketing and other postproduction constraints and organizational constraints. These are the attitudes and obstacles that keep urban agriculture from being as efficient and expansive as it has the potential to become. Some of the more entrenched constraints enumerated include: the perception of urban farming as not-modern, the use of recycled waste-water seen as unsanitary, gender bias where farming is a 'woman's activity, constraints on access to land and water where farming is illegal, the fact that inputs: seeds, tools, fertilizer, are designed for rural use, the lack of official recognition leads to a lack of access to credit, information and technology, and lack of access to postproduction processes like marketing and distribution. A final editorial paragraph points out that these constraints affect low-income farmers more often and more severely than high-income and institutional farmers. More general awareness of the potential of urban agriculture is seen as the key to unblocking these constraints. (UNDP)

Part IV of the UNDP report: The Future of Urban Agriculture, is one 20-page chapter, Chapter 10, at the end of a work of 255 pages. Chapter Ten: Promoting Urban Agriculture through Policy and Action, essentially restates the constraints and problems of the previous chapters and promotes corrective actions specific to various levels of organizational oversight: community, city, national and international. Promotional strategies are proposed at varying policy levels and scales of activity.

Only two articles outside of the UNDP report were reviewed which seem to fit best exclusively in this category of: Benefits, Problems, Constraints and the Future of Urban Agriculture, although a number of related topics will be discussed in the section below on Shortcomings of Research in Urban Agriculture. The first article, "Urban Agriculture; a Revolutionary Model for Economic Development," by Chris Lazarus, appeared in the New Village in 2000. The second is CFP Report 18 – Urban Agriculture, Progress and Prospect: 1975-2005, by Jac Smit of The Urban Agriculture Network

(TUAN). Each in its own way is very illustrative of the status of research into urban agriculture.

Chris Lazarus' article is as noteworthy for where it appeared as for the material it presented. The New Village is published semiannually by Architects/Designers/Planners for Social Responsibility (ADPSR). Unfortunately this is often as close as urban agriculture gets to being included in urban planning discussions. The article presents profiles of some familiar faces in urban agriculture, Michael Abelman, Jac Smit, and some representative U.S.A. community co-op and development projects. It presents the activity as a community-building tool and introduces both the economics of the process and the urban design positives from a social-responsibility design perspective.

The second article, CFP Report 18, is by a familiar name, Jac Smit of The Urban Agriculture Network. It is essentially a report version of the progress of activities covered in the UNDP report of 1996. It was published at the same time, but includes the prospects for the time period of 1975 -2005.

Web Resources on Urban Agriculture

The 1996 UNDP report makes no reference to Internet resources. Those items reviewed or presented below are one paper and the following websites:

Rees, William E. "Why Urban Agriculture?" Notes for IDRC Development Forum on Cities Feeding People. City Farmer 1997.

<http://www.idrc.ca>

www.cityfarmer.org/

www.nal.usda.gov/

www.ruaf.org/

<http://www.ipcs.org/au/>

www.cityfarmer.org/TUAN.html

<http://www.cipotato.org/urbanharvest/home.htm>

<http://www.agnet.org>

The technologies of Internet reference searches have changed dramatically during the time period this literature review has been conducted. In the spring of 2000, universities had the capabilities to search various academic

catalogues in specific disciplines. These were of very limited help because it is the nature of Urban Agriculture research to fall outside of traditional disciplines. Google, as a search engine, had only left beta usage in the fall of 1999. The data that it searched for keywords did not yet include extensive research literature. At the end of 2000 Google offered its search services to educational institutions. News database searches began in 2002. Therefore the first number of years of research mining for this literature did not have the benefits of search engine capabilities that we are accustomed to today.

January 28, 2000 Internet searches did find web pages for the International Developmental Research Centre (IDRC), <http://www.idrc.ca>, Cities Feeding People Project Descriptions and Cities Feeding People Fact Sheets. There was a link for a website for the AGUILA Homepage, (Agricultura Urbana Investigaciones Latino America) and a presentation of the goals of AGUILA. The Reports Index of the IDRC Cities Feeding People (CFP) webpage listed over 80 report links in 5 Categories. They were listed with a report number and the country of investigation noted. The Categories and number of reports each (), were:

1. Technologies and Urban Food Production and Processing (15)
2. Reuse of Urban Waste and Water Management (20)
3. Urban Food Security, Supply and Nutrition (13)
4. Policies for Urban Agriculture (23)
5. Regional Networking (12)

This website was copyrighted by the IDRC and last updated September of 1999. In 2000 this led to many of the seminal works and authors in the field of urban agriculture.

Revisiting web searches in May of 2000 found posted by City Farmer of Canada's Office of Urban Agriculture, <http://www.cityfarmer.org/>, which had been established in 1978 and had been online since October of 1994. The homepage had 26 printed pages of topics and links on subjects relevant to urban agriculture. Very little was or led to academic literature, the primary quest of our research. It was reported that over 200,000 files were transmitted from the site in April 2000. All file transmissions were up 43% from 1998 in 1999. One link, References relevant to Urban Agriculture, generated only five pages of very unorganized

and unrelated works. Another link contained the Summary of the Programme Proposal for the Research Centre on Urban Agriculture and Forestry, RUAF, and a link to its homepage, www.ruaf.org/. From the Proposal: "The RUAF programme operationalises the Information and Communications Section of the Global Facility on Urban Agriculture (GFUA), an inter-agency funding and management unit...The RUAF-programme will be administered by the IRDC..." There is a site available in both English and Spanish that focuses on activities in Latin America, <http://www.ipes.org/au/>.

Another link on the City Farmer website was the TUAN (The Urban Agriculture Network) 1999 Activity Report. It ran three pages and had a link to the TUAN site. This introduced the name of Jac Smit to the researcher. He is omnipresent in the literature of this subject and was personally helpful to this researcher as was described in the introduction with an exchange of bibliography information.

What was surmised from the web research through April of 2000 was that there was a good deal of interest, activity and work in the area of urban agriculture spread around the world, but not much of this activity could be categorized or found as academic literature. Since urban agriculture had mostly fallen between or outside of the academic disciplines of Agriculture, Agronomy, Horticulture, Urban Planning, Sociology, Anthropology, Geography and others that were related but not embracing, formal research seemed to have been either unfunded or catalogued ineffectively when carried out. There was a good deal of writings by those active in the field, but very little research literature. The general themes were promotional and how-to in nature. A great deal of interaction and cooperation was noticed between interested researchers and agencies.

The link on the CityFarmer site to a paper by William E. Rees, PhD, University of British Columbia, is an example. The article titled: "Why Urban Agriculture?" ran five pages, covered the basics of urban agriculture as a positive sustainable activity. Ten references were cited and it was stated to have been revised last in June of 1997. Although by an academic, this was not a research work, but notes for an IDRC Development Forum on Cities Feeding people: A Growth Industry. A book and an article for an academic

journal by the author were cited in the references. Most of the subjects in the 26 pages of the City Farmer homepage were local activities, how-to articles, or papers for conferences concerned with urban agriculture. Cataloguing of actual research in the field was very limited.

In August of 2000, a two-page site was found on the City Farmer Urban Agriculture Notes page for: Latin America and Urban Agriculture. It was revised July 15, 2000. There were 14 links to reports, papers or organizations. The AGUILA homepage was one of them as were four reports on urban agriculture programs in Cuba. Others described projects in Mexico, (6) and Haiti (1) among more general features on the topic.

In May of 2000, the City Farmer Urban Agriculture Notes homepage mentioned above had 150 subject links active. It noted that readers had accessed the site from 159 countries. Although Cuba was one of the countries for which a good deal of activity was documented on the homepage, it was not one of the 159 countries listed as having accessed the site. At this point Cuba had not opened up to the Internet for its citizens, so although it was a world leader in government supported programs and informal activity, it could not directly share the information of these programs nor gain information of worldwide activity for its participants via the Internet.

Another informative site found in April of 2000 was the National Agriculture Library site for the US Department of Agriculture. A subsection titled: Urban Agriculture: An abbreviated List of References and Resource Guide, had 16 printed pages with a last update notation of October 21, 1997 and apparently written September of 1997. A well-written informative introduction to urban agriculture gave briefly the relationship past and present between rural and urban farming, the gradual modern movement away from sustainability in agriculture and the development of urban agriculture as an alternative to *conventional* agriculture. Its benefits to the stressed urban environment were summarized. The Alternative Farming Systems Information Center (AFEIC) is introduced as being under the NAL and focusing on alternative farming systems. Following was a list of 12 books, 11 of which had NAL catalogue numbers. The

twelfth was noted as obtainable from TUAN. Three of these are reviewed in this research, another was a work by Daniel Maxwell but not one of the ones of his reviewed here and the others represented a range of topics and emphasis from small scale permaculture, community garden advice and general urban agriculture analysis focused on Canada, the USA and various parts of Africa.

Following this was a section titled: Articles from Periodicals and Newsletters that had thirteen entries. All but one was listed as available from AFSIC. They were drawn from a wide range of journals: trade, scientific, academic and newsletters of sympathetic organizations. Examples would be the *Journal of Soil and Water Conservation*, *Scientific America*, *International AG-Sieve*, *Nutrition Week*, and *Hunger Notes*. The familiar names of Jac Smit (3), Annu Ratta, Pablo Gutman, Joe Nasr and Gary Stix were contributors.

The next section of the NAL site, Research, Studies and Reports, had ten entries, although one, the Cities Feeding People Report Series 1-19 from the IDRC had 19 individual report entries under its own entry. Some of these have been reviewed. The others ranged from a National Park Service report on community gardens in Washington, D.C., to reports from the UNDP and the World Bank. Contact information for nine individuals and thirteen organizations listed as involved in urban and community agriculture programs was given following this. Only three university contacts were listed and these seem to be in the nature of community outreach programs. This section was entirely U.S.A. oriented. The final section of the NAL references and resource guide was set aside for Contact Information and Websites. There were 23 organizations and programs listed.

Following up on these same websites in March of 2006 found all of them much more extensive, with multiple levels cascading downward through levels of organization. Finding old programs was easy using search options, but would have been hard to ferret out if the researcher had not known what was specifically being investigated. The IDRC "Cities Feeding People" program, one of the main features on the IDRC 2000 web site, was four layers down and had evolved with the Environmental Management Secretariat, into the Urban Poverty and Environment (UPE) program. Three

layers down under this was found a page for AGUILA (Latin American Urban Agriculture Research) that ran five pages of programs, contacts and literature. Other than larger font and a few more links, it is amazingly similar in content to the IDRC-AGUILA, page from January of 2000. Directly under the UPE web page, and seemingly an important part of the reworked CFP program, was a three-page presentation of Urban Agriculture and Gender. It included links to three documents and a related website on gender and water alliance. Under UPE in the category of News and Events, was an announcement of a new RUAF website launch. It included a link to the RUAF.org website and a description of the content.

If one were to want to do one thing in beginning an interest in urban agriculture it would be to visit the Urban Agriculture Notes homepage of the City Farmer website, <http://www.cityfarmer.org/>. Its format is the same in 2006 as it was when first visited by the researcher in May of 2000. The homepage runs on and on with links and information. When printed out in 2000, it ran to 26 pages. It is not a *modern* webpage format, but it eliminates the excessive hide and seek use of the “back” button that multi-level, newer sites require. Whereas the 2000 homepage had 150 links active, the 2006 version had around 100 specific links active but had added some more general links that enabled inquires to proceed further in a multi-level format. These included: Search our site, urban agriculture discussion forum, most recent pages and links added (by date) and a link for “more urban agriculture stories.” This last leads one to Homepage Two that has as many specific additional links as had the original 2000 site. The countries from which readers have accessed the City Farmer site has increased from 159 to 200 and Cuba can now be counted as one of those contacting countries. The material covered on the website is still predominantly North American oriented, with particularly extensive coverage of activity in and around Vancouver, British Columbia. The site is so extensive however, that there is still an abundance of links leading the researcher to information about activities around the globe. TUAN, RUAF, IDRC, AGUILA, among others, all have links on these homepages.

Two areas of the City Farmer website visited in both May of 2000 and March of 2006 warrant further analysis

relevant to the research here. The first is sub-titled References Relevant to Urban Agriculture. In 2000 the page had nine references, the most recent a “Resource Guide on Urban Agriculture” by the Technical Centre for Agriculture and Rural Cooperation, in the Netherlands from June of 1999. Included also was the NAL page: Urban Agriculture: An abbreviated List of References and Resource Guide, September 1997, which was discussed above. By March of 2006, 6 references were added to those nine, as well as a list titled: Urban Agriculture in History Book References, compiled by Jac Smit in February of 2004. Two books available in German were listed. Three of the new references presented dealt with Africa, one India and another Africa and India and one, combating Russian poverty with garden plots.

The second area of specific interest to this research is sub-titled: Latin America and Urban Agriculture. The convenient attribute of this sub-section is that the postings are listed by ascending dates. The bottom 15 postings are what were viewed in 2000; the earliest of these was posted in June of 1998 concerning urban agriculture in Port-au-Prince, Haiti. The most recent of this bottom 15 was posted May of 2000, concerning recycling of solid waste east of Mexico City. In between were four about activities in Cuba, and five more on Mexican activities. Since the May 2000 posting there have been 32 others, the most recent focusing on the film Seeds of the City, concerning the greening of Havana. Seven other postings were about Cuban activities and two others about the recent exportation of those activities to Venezuela. Activities in the following countries also have individual postings: Uruguay, Ecuador, Argentina (2), Chili, Brazil (2), Costa Rica, Nicaragua, and Jamaica. There were also postings for regional groups, conferences and programs. At the top and bottom of this long webpage, which printed out to 13 print pages, were ads for gardening supplies, raised beds, solicitation of dairy farmers, Green Gorillas, Plant Seeds of Change and USDA Registration. These were documented as “ads by Goooooogle.” Urban agriculture activities in Latin America are under-documented both academically and in the journals of associated disciplines. This sub-section of the City Farmer Website is a valuable non-academic resource for beginning any research into the quality, quantity and nature of urban agriculture in Latin America. This website can be particularly helpful for research on UA in Latin America compared to starting an

investigation into activities in any other region of the world where academic documentation might be more thorough, and where news and conventional publications have covered the activities more extensively.

Another tremendously essential website in the pursuit of knowledge of urban agriculture is the National Agriculture Library, www.nal.usda.gov that was mentioned as a 2000 web source above. It is beyond the scope of this research to review this entire site, but one feature in particular needs updated presentation: Urban Agriculture: An Abbreviated List of References and Resource Guide 2000. (http://www.nal.usda.gov/afsic/AFSIC_pubs/urbanag.htm) In the current, spring 2006, version of this webpage, which was apparently compiled in September of 2000, seven of the original 12 books are still listed. The other five have been dropped and a new six added. Since the work was done in 2000, none is of more recent publication. In the next section of this resource guide: Articles from Periodicals and Newsletters, 16 articles are listed in the new 2000 compilation. Seven are added to the older 1997 compilation, while three articles were no longer listed. None of these seem to be truly academic articles but are from journals such as: *Hunger Notes*, *New Village Journal*, *Environment and Urbanization*, *Nutrition Week* and *The Journal of Soil and Water Conservation*. The next section of the NAL site, if rigorously pursued, could be an invaluable resource to researchers in urban agriculture: Research, Studies and Reports. The main listing is the Cities Feeding People Report Series, which has grown in the 2000 compilation to 30 reports, from 18 in 1997. The new reports cover, among other topics, gender issues, land rights, urban planning and public health. The rest of the report area grew from 10 entries to 12, but there was an addition of 6 new and loss of 4 old.

Two new sections were added to the 2000 Guide: United States Department of Agriculture Research and Sustainable Agriculture Research and Education Program (SARE) Urban Agriculture Project Reports, and 1999 USDA Community Food Project Grants. The first describes the SARE program and gives contact information for seven projects. The second describes and gives contact information for 20 USA

community food projects. Most are urban oriented and involve community gardens.

The last section of the NAL 2000 Urban Agriculture Resource Guide gives over 50 listings of contact information, including in most cases web addresses, for Urban and Community Agriculture Resources. Included are familiar sources such as, AFSIC, City Farmer, Food First, IDRC, and TUAN, but also a broad variety of small local community farming activists. If one's interest is basically urban agriculture in the United States, then this website is the place to start one's research. Obviously it would be beneficial to have these holdings updated from 2000. All of these features discussed as last updated in 2000 are what are on the site in the spring of 2006. Two other features of the NAL website were utilized by the researcher. The AGRICOLA database was searched using the term "urban agriculture." This yielded 27 links that did not add substantially to this research effort. Another search of the article citation database, with the same keywords, yielded 26 articles published between 1974 and 2004. There was much that was not uncovered previously by research here and the results were not limited to activity in the USA. The familiar names of Smit, Ratta and Maxwell were represented. A similar search for keywords "urban agriculture" was done on the National Agriculture Library database. This yielded 96 NAL call numbers, two from 1918 and 1922, the rest from 1970 onward until 2005. From titles only, there appears to be a good representation of all regions where urban agriculture is practiced. Many of the works reviewed in this research are listed as well as some other works by the same authors. Of the most recent call numbers, from 2002 – 2005, nothing appears to be covering entirely new areas of research but there are works on activities in different cities and regions than previously reviewed.

The websites of three organizations mentioned above deserve renewed attention in 2006, IDRC, RUAF and TUAN. The IDRC CFP Report series has reached 40 reports with the most recent focused on land access in Bamako, Mali. The RUAF homepage announced a new RUAF Foundation and a: Cities Farming for the Future (CFF) program. Central was the publication of an Urban

Agriculture Magazine. It had run to 16 issues by December of 2006. It is a good source for compact articles on a number of urban agriculture themes and locations. Two important resources of this site are found under an Information Resources sub-button. One is a RUAF Annotated Bibliography on Urban Agriculture that was in formation at the onset of this research. It can be found at <http://www.ruaf.org/node/692>. The full document can be downloaded as a PDF (4.3MB) file. The bibliography runs to over 800 pages so a high-speed connection is recommended. It can be viewed online by accessing one of 16 book pages that were created to organize the bibliography for online research. All 16 book-pages can be accessed individually, but one must know where a particular researcher has been placed to find a particular work. The other important research on the RUAF site is a Web link Directory. This has three subtitles: Urban and Peri-urban Agriculture (70), City Development Issues and Urbanization Trends (23), and Environmental and Waste Management (19). The variety of agencies and groups working in this field is represented well. A Highlighted Publications sub-button leads to the Annotated Bibliography.

The Urban Agriculture Network (TUAN) World Wide Web presence is on the website of Cityfarmer.org at: <http://www.cityfarmer.org/TUAN.html>. The presence in March of 2006 was listed as last revised January 12, 2005. TUAN, largely through the efforts of its President, Jac Smit, has been central to the promotion, understanding and research in urban agriculture. This current homepage on the City Farmer .org website gives a brief history, a 2005 vision and objectives, and recent achievements in six areas. A follow-up to the UNDP “seminal, best-selling book, Urban Agriculture: Food, Jobs and Sustainable Cities” is promised in 2005. This original book has its own link on the City Farmer site that prints out to 12 pages. It has good descriptions of the book and activities, links to the Table of Contents and Illustrations, mentions a forthcoming major update and was last revised August 1, 2001. As mentioned in the introduction to this research, this work is so central to the expansion of knowledge in the field of urban agriculture and covers the subject so thoroughly, that its table of contents was used as the outline format for this literature review. Compared to the TUAN page previously visited, that was posted January 6, 2000, the current page has much less

information about urban agriculture and more about the network’s accomplishments and affiliations. The City Farmer website is called “the primary website we support” and is said to be “receiving over five million hits a year [15,000+ a day]. The entire webpage, which printed out to six pages, is very small compared to the impact that this network has had since 1992 in the study and promotion of urban agriculture.

In summary, the web resources for inquiries into urban agriculture activities are helpful, but reveal the deficiencies of research and organization in the field of urban agriculture that will be discussed more thoroughly below. In specific, web searches through general search engines or on various relevant websites, will turn up reports on activity or individual programs and projects. It will be found though, that interest on a specific aspect of urban agriculture that crosses regions, (for example: the differing characteristics of farming on 1/2 acre plots across Latin America, Asia and Africa, or the crop differences between developed and developing urban formats) is very difficult to compile from search results. It will also be difficult to find and separate out academic research on various aspects of urban agriculture. On many relevant websites academic documentation is a number of levels down below promotional descriptions and current activity of the organization. Documentation is often limited to that website’s specific interest, if it has been compiled at all.

Two other websites deserve mention. The Urban Harvest Homepage, <http://www.cipotato.org/urbanharvest>, allows one to search for news and events by continent listings. Its goals are laid out on the homepage as: “We work to contribute to the food security of poor urban families, and to increase the value of urban agricultural production in urban and peri-urban areas, whilst ensuring the sustainable management of the urban environment.” It was particularly helpful in updating research being done in Asia. Also helpful in updating Asian research was the website of the Food and Fertilizer Technology Center (FFTC) found at <http://www.agnet.org>.

Simply “Googling” the term “urban agriculture” on 15 March 2006, got 58 million hits in 0.03 seconds. This, of course means very little. The first 30 results would lead

an interested party to many of the most important web resources. The first three were the City Farmer, Nal.usda, and RUAF sites in that order. The fourth is a website for the Fairview Gardens farm in Goleta, CA. This farm was the site and inspiration for the book On Good Land, by Michael Ableman, that is reviewed in the non-academic section below. Among these first thirty results also are the idrc, nuac (national urban agriculture council), foodproject, foodshare, foodsecurity and foodfirst sites, either homepages or links to articles. Related academic programs in the departments of two universities, Georgia and Arizona, were listed in the results. At least four of these thirty results are articles or sources presented in this literature review. In this manner, it can be seen that a simply search engine inquiry could lead one to many of the primary players in the field of urban agriculture, particularly for activity in the United States. As mentioned, City Farmer is also a portal to much of the global activity.

Web resources are not strictly academic literature, but they have been included in this section because at the present the powerful filtering tool of web search engines can be used to uncover a great deal of activity in the field, academic and otherwise. As will be discussed, the field of urban agriculture does not as yet, have an academic home as a discipline.

Other Considerations on Research in Urban Agriculture

Where Urban Agriculture is found in Academic Curriculums

Works reviewed in this section are:

The Arid Lands Newsletter, Vol. # 42, Fall/Winter, 1997,
ISSN: 1092-5481

Pinderhughes, Raquel. Alternative Urban Futures: Planning for Sustainable Development in Cities throughout the World.
London: Rowman & Littlefield Publishers, Inc. 2004

Lawson, Laura J., City Bountiful: a Century of Community Gardening in America, Berkeley and Los Angeles:
University of California Press. 2005.

What follows is a partial compilation of where urban agriculture can be found in academic curriculums in the spring of 2006. They were found by “Googling” the terms “urban agriculture university courses” and “...college courses.” It does not cover conferences and special events, but focuses on where urban agriculture has become part of an institution’s programs.

The Georgia Center for Urban Agriculture is a satellite operation of the University of Georgia. The introductory paragraph of its web site is reproduced below.

“The Georgia Center for Urban Agriculture will combine the resources and expertise of The University of Georgia, agricultural industries, and producers to define and address constraints to economic growth, to promote environmental stewardship, and to enhance the development and the delivery of science-based information.” ---- GEORGIA CENTER FOR URBAN AGRICULTURE

Contact information is given for what is titled the Urban Agriculture Coalition. It includes seven organizations including the Georgia Agribusiness Council, Georgia Golf Course Superintendents Association, and irrigation and turf associations. From the nature of the information given it would seem that at the Georgia Center for Urban Agriculture a curriculum in urban agriculture is largely about golf course maintenance. The program can lead to an Erosion Sediment Control certification, which it is related will be required in Georgia of “anyone involved in minor lands disturbing activities.”

The Urban Agriculture Network (TUAN) continues to have a strong presence on the City Farmer website reviewed above. One of the recent changes noted is the use of a shortened acronym, UAN. This is mentioned in this section because the 2005 Objectives, reproduced below, include the development of a UA course for Ryerson University and the transfer of UAN’s library to Ryerson University’s Centre for Studies in Food Security. The union of UAN and Ryerson University is an example of one way that the copious practical and institutional background that exists in urban agriculture can begin to work its way into formal academics. Ryerson University awards a certificate for work in the food

security field. Ryerson University is located in Toronto, Canada. The UAN 2005 Objectives are:

1. We will produce a monthly Internet-based UA newsletter with partners in Australia, India, Canada, Peru and Kenya.
 2. We will publish the 2nd edition of our book *Urban Agriculture: Food, Jobs and Sustainable Cities*.
 3. We will increase the training capacity of UAN by a) conducting a training course in UA for the Middle East and North Africa, b) producing and administering a trial of a breakthrough emergency agriculture-training course in the service of long-term refugees for humanitarian organizations, c) developing a UA course for the Certificate in Food Security at Ryerson University.
 4. We will develop UAN's resources and communications capability by transferring our library [the world's largest on the topic] to Ryerson University's Centre for Studies in Food Security, a research institution with global links.
 5. We will produce and publish at least three journal articles; one on Urban Agriculture and Health [with partners] and one on Urban Agriculture and Community Development are in process.
 6. We will present UA at four significant conferences, one of them overseas.
4. We have refined the organization of our library, including placing 4,000 items on the web; see www.ruaf.org.
 5. This year, President Jac Smit published an article on the ethics of UA on the Internet and wrote the preface to the book "Continuous Productive Urban Landscapes" [publication 2005]; Joe Nasr wrote two chapters in the *Interfaces* book, in addition to co-editing it.
 6. In the last decade, we have presented and keynoted at conferences in Brazil, Canada, Germany, UK, Cote d'Ivoire, India, Cuba, Lebanon, Turkey, Indonesia and the USA. Last month, we led the establishment of a multi-university-based Working Group on Community Food Planning.

Ryerson's web homepage introduces their program with the following:

"Established at Ryerson University in 1994, the Centre for Studies in Food Security (CSFS) has been working to promote food security through research, dissemination, education, community action and professional practice. We take an interdisciplinary and systemic approach to the social justice, environmental (sic) sustainability, health and socio-cultural aspects of food security.

The Centre shares information and facilitates dialogue among civil society organizations, universities and governments through our web site and associated mailing lists. We have hosted several national and international conferences and we are engaged with food security initiatives at local, regional and global levels."

Actual coursework is not described, but the Centre's support of urban agriculture activities is articulated. Its introduction to urban agriculture and the University involvement with it are described on another web page:

"The practice of producing crops and/or raising livestock within urban and peri urban areas is one strategy that contributes to improving the food and nutritional security status of individuals and populations (Ruel et al. 1998). Depending on the amount of land available and the intensity of cultivation, urban agriculture has the potential to increase access to food for both farmers/gardeners and the broader urban community. There is increasing interest in examining

Recent UAN achievements in these six areas:

1. We have been contributing news items to www.cityfarmer.org twice a month and three times a year to the *Urban Agriculture Magazine* at www.ruaf.org [the latter is published in four languages].
2. In 2004, we partnered in publishing a 400-page book in French on UA in the Middle East and North Africa, *Interfaces: Agricultures et villes ^ l'Est et au Sud de la MŽditerranŽe*; Vice-President Joe Nasr was the lead editor. Translations are pending. We advanced the process of publishing the 2nd edition of our previous best seller.
3. Over the years, we have: a) designed a two-week emergency agriculture-training course for private voluntary agencies in Sudan, b) administered a three-day training course on the subject for a major NGO, c) partnered agriculture programs in refugee camps in India and Bangladesh and d) advised similar programs for CARE, CRS, IRC and UNICEF.

and capturing the benefits of urban farming in relation to access, availability and acceptability of food, as well as interest in urban farming's potential contribution to the quality of life in urban areas, in relation to social cohesion, for example. Another important area for research includes examining, and developing strategies for mitigating, the risks associated with growing food in an urban environment. These risks include contaminated soils and zoonotic diseases, as well as challenges associated with insecure land tenure and policies that discourage urban farming.”

Several members of the Centre have been involved with initiatives related to understanding urban agriculture activities and promoting their potential contribution to the food and nutrition security of urban dwellers.

References:

Ruel MT, Garrett JL, Morris SS, Maxwell D, Oshaug A, Engle P, Menon P, Slack A, and Haddad L. 1998. Urban challenges to food and nutrition security: A review of food security, health, and care giving in the cities. FCND Discussion Paper No. 51 International Food Policy Research Institute, Washington, DC.

For more information on the Centre's work relating to Urban Agriculture contact:
Fiona Yeudall at fyudall@ryerson.ca

Some familiar names are seen in the references listed. Hopefully this collaboration will give a springboard for further academic research in the area and the development of an urban agriculture curriculum.

Another Canadian institution with a Toronto campus, York University, has an extensive Environmental Studies Program. One of the concentrations offered in this program is a Concentration in Urban and Regional Environments: Analysis, Planning and Design. The website presents some sample courses offered for this concentration including Urban Sustainability and Urbanization in the Third World.

A more complete and urban agriculture specific course description was found on the web and is reproduced below:

“Gardens as Cultural Survival/Gardens as Resistance. The objective of this session is to place urban gardens/urban agriculture within a framework of current

debates in cities: linkages between the local and the global; multiculturalism and identity; growth machines and movements of resistance. Papers could be ethnographies or case studies of cities in the South or North, theoretical or policy related. This session focuses on gardens as cultural landscapes and as strategies of resistance in a global economy. Urban gardens are a survival strategy in cities of the South and North; in global cities with multicultural populations, gardens are also sites for the creation of cultural landscapes and transmission of indigenous knowledge. Gardens may also become the sites of contestation between conflicting visions of how vacant land might be used. The garden battles in New York City exemplify the conflicts over land for growing controlled by local communities vs. land for capital accumulation. Gerda R. Wekerle Faculty of Environmental Studies York University gwekerle@yorku.ca”

In the Environmental Studies Program at York University it can be seen that courses relevant to and exploring urban agriculture have been developed.

The Restoration of Natural Systems Program at the University of Victoria, British Columbia, Canada, offers a course titled Urban Restoration and Sustainable Agriculture Systems (ER331). The Restoration of Natural Systems Program is an accredited course of study under the Division of Continuing Studies that focuses on environmental restoration. Other course offerings in the program are grouped under headings of: Eco-systems, Land and Resource Management, Ecorestoration, Restoration of Aquatic Systems and Non-timber Forest Product, among others. ER331 “...covers these two related topics, starting with urban restoration, then moving to urban agriculture and sustainable agriculture systems.” Although, the course would not seem to cover the historic or subsistence nature of urban agriculture but rather its curative qualities for the broken urban environment, it is an important step to have the subject in an accredited university curriculum.

Cornell University, College of Agriculture and Life Sciences lists two related courses: LA 491 Creating an Urban Eden; and LA 495 Green Cities: the Future of Urban Ecology

Langston University, Langston, OK, School of Agriculture and Applied Science, lists two related courses:

AS 3613 Crop and Soil Science – Urban; and AS 3633 Intro to Urban and International Agriculture.

University of Arizona, Office of Arid Lands Studies (OALS), seems an unlikely place to find investigation of urban agriculture activities, but their publication, *The Arid Lands Newsletter*, devoted Vol. # 42, Fall/Winter, 1997, ISSN: 1092-5481, to the topic. Coverage is of city agriculture issues in the Middle East and Africa. The Table of Contents lists six articles plus further information on Resources in Urban Agriculture and Selected resources and News of Interest. The articles are: [The Newly Recognized Importance of Urban Agriculture](#), by Katherine Waser, editor, [Agriculture in Middle Eastern Cities: Commonalities and Contrasts](#), by Joe Nasr and Paul Kaldjian, [Istanbul: Opportunities in Urban Agriculture](#), by Paul Kaldjian, [Are Urban Gardens an Efficient use of Resources?](#), by David Cleveland, and [Urban trees in Arid Landscapes: Multipurpose Urban Forestry for Local Needs in Developing Countries](#). These 1997 articles were a useful publication to document briefly the urban agriculture activities of arid regions and to spread knowledge of the existence of these types of activities. They do not go into any great depth of documentation but introduce the subject in a little looked at climatic setting. Information on whether urban agriculture is represented in the curriculum was not available. Contact information is: Katherine Waser, editor, Office of Arid Lands Studies, The University of Arizona, 845 North Park Avenue, Tucson, AZ 85719-4896
<http://ag.arizona.edu/OALS/alin.html>

In September of 2005 the American University of Beirut held a three-week training course on urban agriculture. Although not actually part of the curriculum at AUB, the importance of urban agriculture to the region and the attention of academics in the region are seen by this session held in late 2005.

Raquel Rivera Pinderhughes, Professor of Urban Studies, San Francisco State University, San Francisco, CA, listed some courses in the Spring of 2004 that could include the discussion of urban agriculture under the Department of Urban Studies. Both URBS 514, Sustainable Development in Cities and URBS 530, Alternative Urban Futures, address topics that allow for the discussion of urban agriculture.

Professor Pinderhughes published a book in 2004 titled [Alternative Urban Futures: Planning for Sustainable Development in Cities Throughout the World](#), which includes analysis of urban food systems. This book will be reviewed in the section below on Urban Design. Two other courses that she teaches, URBS 565, Social Policy and the Family, and URBS 515, Race, Poverty and the Urban Environment, seem open to the discussion of urban agriculture.

Laura Lawson, Assistant Professor, Department of Landscape Architecture, University of Illinois Urbana-Champaign, published [City Bountiful: A History of Urban-Garden Programs in America, 1890s to Present](#), in 2005. She has also written articles and bulletins that include the subjects of planning urban gardens and urban agricultures. Her current courses listed do not explicitly mention urban agriculture as subject matter included but appear open to the discussion of urban agriculture issues under the umbrella of Landscape Architecture. [City Bountiful](#) has much information that is important to the study of the evolution of urban agriculture in North America. Especially intriguing are sources listed that document programs in the late 1800's and early 1900 utilizing small plot gardening to feed the poor.

The above examples of current academic activities in urban agriculture, and the academic literature reviewed throughout this research, are an incomplete representation of the total academic interest in the field of urban agriculture, but they do give a sense of the initial efforts to incorporate urban agriculture research into academic curriculums. It would be an interesting exercise to compile the recommended reading lists for all of the above-mentioned course offerings.

In the section on Web Resources, some web sources that were found had links to both academic literature and programs. Many of the web sources were not strictly academic. Research has shown that a good deal of material about urban agriculture exists outside of academic literature. In addition to web sources that are non-academic, there is much published non-academic material that adds to the understanding of the phenomena of urban agriculture. Some of that will be presented next.

Literature found outside of Academic Urban Agriculture

Much of the central literature about urban agriculture has not come out of any of the traditional academic disciplines. The extremely comprehensive City Farmer website, mentioned above, makes no distinction in the links and information that it posts. Many links lead to papers, of which a number have been reviewed in this work, that were prepared for professional journals or conferences. Many others are the products of grass-roots groups describing the characteristics and promoting the benefits of urban agriculture. It could easily be proposed that an accurate picture of urban agriculture world-wide can not be achieved without wandering outside of the confines of academic, developmental, governmental and related professional literature. The subject of where urban agriculture information is or is not currently found will be discussed in the following sections Urban Agriculture and Urban Design and Shortcomings of Research in Urban Agriculture.

Three broad areas outside of academic literature are books, magazines and newspaper articles. Particularly for activities in the developed nations, there has been a good deal published on urban agriculture in each of these formats. Some representative works will be reviewed from each format. The website for the Journey to Forever project, <http://journeytoforever.org/index.html>, has a sub-page on city farming and a list of Resources for City Farms. This includes many reports and programs; IDRC and CityFarmer to name two, that have been reviewed in this work, but also listed are 13 books on the subject with their ISBN numbers for reference. For the most part these would not have been found in standard academic literature. Journey to Forever is an interesting project in interactive education through travel, whose “aim is to help people fight poverty and hunger, and to help sustain the environment we all must share.” Books by Alice Skelsey, Mike and Peter Stevenson, Raquel Pinderhughes and Laura Lawson have been reviewed in areas covered above. More books relevant to urban agriculture reviewed below are:

Cooper, Thomas C. Odd Lots: Seasonal Notes of a City Gardener. New York: Henry Holt and Company. 1995.

Kramer, Jack. The Suburban Farmer’s Handbook: A Comprehensive Guide to Growing and Preserving Your Own Food and Drink. New York: Doubleday & Company, Inc. 1977.

London, Sheryl. Anything Grows: Ingenious Ways to Grow More Food in Front Yards, Backyards, Side Yards, in the Suburbs, in the City, on Rooftops, even Parking Lots. Emmaus: Rodale Press. 1984.

Colby, Deirdre. City Gardening: Planting, Maintaining and Designing the Urban Garden. Stamford: Longmeadow Press. 1993.

Guillard, Spring. Diary of a Compost Hotline Operator: Edible Essays on City Farming. Gabriola Island: New Society Publishers. 2003.

Lappe, Frances Moore, Anna Lappe. Hope’s Edge: the Next Diet for a Small Planet. New York: Jeremy P. Tarcher/Putnam. 2002.

Ableman, Michael. On Good Land: the Autobiography of an Urban Farm. San Francisco: Chronicle Books. 1998.

Chavis, Melody Ermachild. Alters in the Streets: a Neighborhood Fights to Survive. New York: Bell Tower. 1993.

Woelfle-Erskine, Cleo, ed. Urban Wilds: Gardeners’ Stories of the Struggle for Land and Justice. Oakland: water/under/ground publications. 2003.

Mollison, Bill. Permaculture II: Practical Design and Further Theory in Permanent Agriculture. Tasmania: TAGARI. 1979.

Bell, Graham. The Permaculture Way: Practical Steps to Create a Self-sustaining World. Hampshire: Permanent Publications. 2004.

Most of the urban agriculture activity that finds itself documented in published book form has to do with activity in the developed world: the United States, Canada and Europe. Personal gardens, container and small lots are the focus of much of this in the form of instructional, self-help or anecdotal works. A premier work representing the philosophical enjoyments of this type of activity would be Odd Lots: Seasonal Notes of a City Gardener, 1995, by Thomas C. Cooper. This is a collection of essays by the

editor of Horticulture magazine that beautifully communicates the joys and peace of maintaining a small garden in the city. Amongst the elegant prose, a great deal of knowledge on the working of a small garden is transferred.

The Suburban Farmer's Handbook: A Comprehensive Guide to Growing and Preserving your own Food and Drink, 1977, by Jack Kramer, is a product of the renewed interest in the land during the 1960's and 70's. It covers the basics of growing in small areas and information on flowers, vegetables, herbs, fruit and nut trees, berries wild plants and sprouts. Further chapters cover insects and diseases, storage of produce, beekeeping, winemaking and information specific to community gardens. For a book of just under 200 pages it manages to cover a lot of ground to encourage small plot farming.

Another work in the same genre that was published by the very prolific Rodale Press, slightly more recently, was Anything Grows: Ingenious ways to grow more food in front yards, backyards, side yards, in the suburbs, in the city on rooftops, even parking lots, 1985, by Sheryl London. At just under 250 pages it is an expansive work covering much of the same ground as The Suburban Farmer's Handbook, in more depth and with more information and options presented. There are even physical exercises presented that are recommended in order to prepare for gardening. This is a very thorough work for the North American small container/plot gardener to reference.

Perhaps the prettiest representation of planting in the urban context is Deirdre Colby's City Gardening: Planting, Maintaining, and Designing the Urban Garden. Illustrated by numerous stunning photographs of idyllic city gardens of various styles, this book also includes pertinent information on climate, soil, city-codes, growing systems, design elements and styles. It can be picked up as a resource at any stage of forming or executing a plan for a small urban garden retreat and it is so beautifully done as to deserve a spot on the coffee table.

A more recent documentation of developed society's interest in individual urban agriculture is Diary of a Compost Hotline Operator, Edible Essays on City Farming, 2003, by Spring Guillard. The Forward is by Michael Levenston,

Executive Director of City Farmer – Canada's Office of Urban Agriculture. In the Forward he tells of the first 25 years of growing food in the city of Vancouver, British Columbia and of the growth and involvement of the City Farmer organization. Spring Guillard left advertising copy writing in 1991 and worked as the compost hotline operator at City Farmer until writing the book in 2003. The book not only gives recipes and cures for compost problems but also reveals the spirit and caring of people who till the soil in our city environs. Lists of Contacts and Resources at the end of the book have sections on Community Gardens, Urban Agriculture and Organic Gardening/Gardening. In the Epilogue, a laudable final point is made that urban gardening for most of the developed world may be a hobby, whereas in areas such as Cuba, fruits and vegetables are grown out of necessity. By their improvisation and economy, the Cuban farmers are demonstrating practices that can lead to a "truly sustainable society." The author feels that more than just encouraging a hobby: "...by promoting urban agriculture and encouraging people to look after their own back yards, we are hoping that the world will become a better place." The practices encouraged in the book: "...are all immediate and practical solutions to the environmental crisis – the first layer of compost, so to speak. Still, if what we are trying to build is a more compassionate universe, then there are many more layers to add. It's going to take a lot more than just compost to feed the earth." These thoughts tie the hobby-like activities in city farming of the developed world to the desperate, necessity and informal economic activities of urban farming in developing countries. This is a link that needs to be documented, analyzed and expanded as formal research in urban agriculture progresses. These needs will be discussed further in a section on shortcomings of research in urban agriculture. A compost hotline is an admirable symbol of the dissemination of information on urban agriculture.

An excellent work that explores how urban agriculture fits into the larger scheme of a sustainable planet is Hope's Edge: the Next Diet for a Small Planet, 2002, by Frances Moore Lappe and Anna Lappe. Frances M. Lappe is the author of the widely acclaimed work, Diet for a Small Planet, of about thirty years ago. It proposed individual and societal diets for a healthy planet. This new 400+ page book, in collaboration with her daughter, has expanded that earlier

work. This work is about far broader topics than urban agriculture and the index does not even cite any pages for urban agriculture, but the benefits of the city gardens in Cuba are mentioned, as are jail gardens, green-belt food-security programs, food self-reliance, inefficient land use in Brazil and sustainable farming methods. The whole book is an expanded explanation of how efficient, sustainable farming, (which includes well-done urban agriculture,) fits into the diet for a healthy planet. Beyond being a hobby for the well-off or a necessity for the desperate, this is the deeper raison d'être for urban agriculture.

On Good Land: the Autobiography of an Urban Farm, 1998, is a popular, colorful well-written documentation that could be titled the Diary of an Involuntary City Farm. It is the story of Fairview Gardens Farm, <http://www.fairviewgardens.org/>, in Santa Barbara, California, that was surrounded and isolated from its brethren by an expanding city infrastructure. It was not created as an urban agriculture project, but was subsumed by the city and became one. Along the way it also became a story of perseverance, preserving a culture, community out-reach and resourceful adaptation. The author, Michael Ableman, is the founder and director of the Center for Urban Agriculture at Fairview Gardens. Well-told and well photographed, the project has aligned itself with the North American city farming community and the book contains resources for Land Conservation, Community Action, Food, Agriculture and Gardening and Education. Among those listed are the Urban Agriculture Network (TUAN) and City Farmer. Michael Ableman is the author of a previous work on related subjects: From the Good Earth: Traditional Farming Methods in the New Age, 1993. He also has two more recent works of interest: Fields of Plenty: A Farmer's Journey in Search of Real Food and the People Who Grow it, 2002 and a chapter on urban agriculture in the 2005 book Fatal Harvest.

Urban agriculture in North America does become "edgier" than hobby and sustainable agriculture activities. In general, this edginess is not the result of the desperate condition of the participants as in the developing world, but due to the scrappiness of the fight for the survival of the activity itself, against the implanted institutional and corporate forces of our society. It also has developed as an

antidote to the ills created by the imbalances of those forces. Interesting documentation of a version of that struggle is found in a book titled Alters in the Streets, a Neighborhood Fights to Survive, by Melody Ermachild Chavis, 1992. There are no tips on city farming in this one, but there is a remarkable story about the process by which a neighborhood can be re-invented and gardening in the city was part of that process. Well worth a reading by anyone who thinks that being tied to the earth in some productive manner is part of the struggle against the ills of an undifferentiated and indifferent society.

A book that begins to clarify this connection between urban agriculture in North America, and other developed environments, and activities in the developing societies of the world, (the non-appropriateness of this segregation will be discussed in the Summary), is Urban Wilds: Gardeners Stories of the Struggle for Land and Justice, edited by Cleo Woelfle-Erskine, 2002. Of all of the works on city farming emanating from "the North", this one begins to lay the groundwork for understanding the commonality of urban farming activities around the world. This researcher would select this as the single most important individual work both in and out of academic literature for understanding the essence of the "struggle" to promote food production out of the urban environment in the developed world. Before the title page there is a full-page presentation of a Malcolm X quote:

**"Revolution is based on land.
Land is the basis of freedom, justice and equality"** -
Malcolm X
"Message to the grassroots," November 10, 1963

The work is actually an edited collection of thirty one articles, including ten by the editor, Cleo Woelfle-Erskine, under five broad subject headings: Urban Gardens (10), Urban Farms (3), Struggles (4), Urban-Rural Connections (3), and Compost City; practical strategies for a free and just world (10), plus an Introduction. An appendix: Practical strategies for Sustainable Cities, covers thirteen more building or growing topics. The titles of specific articles evoke individuals and groups of action, people who are doing things to create change, revolutionaries of our relationship with nature. They cover the range from specifically practical to radically philosophical. The practical

examples would be: ‘Swaling a Parking lot, Harvesting Water & Graywater Recycling’, and ‘Guerilla Solar’; and the philosophical: “Environmental Justice, Radical Rural Organizing and Free the Land: the Victory Gardens Project: Athens, ME, Boston, MA; E. Orange, NJ”. The introductory essay to the section titled “Compost City Practical Strategies for a Free and Just World”, nicely places urban farming into the context of a larger struggle. It talks of the revolution to re-structure cities in a healthy rational format. It introduces the history and motivation of the environmental struggles movement, i.e., “...that all people have a right to clean air and water, healthy food and shelter, education, employment and the right to live in neighborhoods free of toxic waste. This merging of environmental and social justice concerns was an important step.” From this grows a movement to bring nature back to the urban environs, and to restore improperly farmed, mined, logged or grazed lands. Next the concept of permaculture is introduced. “Permaculture, a system of design based on traditional indigenous agricultural knowledge, was developed in Australia in the late 1970’s.” These are practical actions for creating a sustainable human culture based on permanent agriculture. This harkens back to the early civilization centers presented in this review above of Civilizations: Culture, Ambition and the Transforming of Nature, by Felipe Fernandez-Armesto and the integration of intense farming and dense populations. Works by Bill Mollison, who coined the phrase permaculture, will be reviewed next below, but the concept and goals developed by Mollison and his followers are summarized in this essay. Overall the essays of Urban Wilds begin to hint at a very real connection between the city gardening activities of “the North” and the struggles of city farmers in less “modern” dense urban centers. The opportunities of this connection and the need for baseline research to document the similarities, contradictions and the potentials of this connection will be discussed below in summary.

Bill Mollison’s published two early works, Permaculture I and Permaculture II published in the late 1970’s. The overriding theme behind both is Mollison’s belief that “...permanent agriculture as a valid, safe, and sustainable, complete energy system.” Permaculture I argued that the design of how we plant can have energy benefits beyond the intrinsic value of plants. Permaculture II is reviewed here for

this research. Its relevance to urban agriculture is its proposal of practical suggestions leading to design solutions across varying climates and circumstances that involve sustainable agriculture, which by definition will produce more calories than they consume. Without mentioning the term urban agriculture, Mollison’s proposals are supportive of the urban agriculture proponents of “closed loop” cities. There are proposals and drawings for planned small-scale production and individual projects that achieve resource equilibrium. The sustainable agriculture ideals delineated could have uses in many urban agriculture contexts. He has a number of works in print and the concepts presented have developed a strong contingent of followers. There is a Permaculture Association that sponsors education and training that can lead to a diploma in Applied Permaculture Design. Its website is <http://www.permaculture.org.uk/>

The Permaculture Way, Practical Steps to Create a Self-Sustaining World, 2004, by Graham Bell covers the tenets of permaculture in a thorough fashion. It has a Forward by Bill Mollison and builds with practical suggestions upon the more theoretical earlier writing of Mollison. There is a section on city farming. It is not about urban agriculture but urban agriculture can easily fit in with the goals and strategies of permaculture. Sometimes the activities of urban agriculture engaged in out of necessity can be harmful to the local environment, but one would hope that when planned for, encouraged and supported, urban agriculture can be totally sympathetic with the hopes for a sustainable planet of the permaculture advocates. One would hope that their concepts should be known and studied by urban agriculture proponents, hence their inclusion in this review.

The second broad category of research found outside of academic literature is magazine articles. Some articles, such as “Asphalt Eden,” in Preservation magazine by Charles Wilson, “Urban Agriculture; a Revolutionary Model for Economic Development,” in New Village, by Chris Lazarus, “Partners in Growing: When Young and Old get together in a City Garden, Beautiful Things Grow,” in Parents Magazine, and “Fresh Food Cheap (All Year Long),” in Organic Gardening Magazine, have been reviewed or mentioned in appropriate sections above.

Other articles relevant to urban agriculture reviewed below are:

McKibben, Bill. "Letter from Havana: The Cuban Diet." Harper's Magazine. April 2005. pp.61-69

Stix, Gary, "Urbaculture: Cities of the Developing World Learn to Feed Themselves," Scientific America, June 1996.

Crane, Peter, Ann Kinzig. Editorial: "Nature in the Metropolis," Science Magazine. 27 May 2005 issue.

"Visions of Ecopolis." The Economist. September 23rd-29th 2006: 20-23.

A very thorough article by Bill McKibben ran in the April 2005, Harper's Magazine titled "The Cuban Diet." He presents the history of Cuban agriculture and the events that led up to the "Special Period" after the collapse of Soviet trade partnerships. Average Cuban calorie intake dropped from 3,000 to 1,900 in the four years from 1989 to 1991. The article gives a very good account of the re-building of a feeding system for a country without the benefit of petrol-chemical products: energy, fertilizer, pesticides and transportation. It presents the green revolution well and asks how exportable are the lessons learned in Cuba's self-sufficiency. The ease with which some decisions could be made in a dictatorship is noted, as is the difficulty for wide-ranging change in a society where commercial efficiency is often the dominant motivation. In general, the article is informative and well written from a northern perspective.

Another type of magazine article is in the spread-the-word genre. In 1996, the same year as the publication of the UNDP report on Urban Agriculture: Food, Jobs and Sustainable Cities, Gary Stix wrote a piece for Scientific America, "Cities of the Developing World Learn to Feed Themselves," June 1996. This article is essentially a review of the UNDP publication. The need for urban food production, history, quotes by Jac Smit, and anecdotal successes, all from the UNDP report, are presented in a format that suggests to the Scientific America readership that this is the hope for the future of impoverished urban centers.

The 27 May 2005 issue of Science Magazine carried an editorial titled "Nature in the Metropolis," by Peter Crane and Ann Kinzig. It was written in anticipation of World Environment Day 2005 and the gathering in June of mayors from around the world in San Francisco in order to discuss sustainability and green cities. The editorial gives statistics about the growth and character of cities and the importance of what will happen in the future to habitats and biodiversity within cities. Some current programs for managing nature in the city are mentioned and the importance of more efforts like those emphasized.

The 23 September 2006, Vol. 380, Number 8496, issue of The Economist, has an article titled "Visions of Ecopolis." No author is credited. It describes the design of an *eco-city* near Shanghai, China. This will be the planned transformation of a forested island into a *green-city* for an eventual population of 500,000 by 2040. The term urban agriculture is never used in the article, but many of the green architecture features proposed hint at the inclusion of city farming activities. All farming will be organic, human wastes will be processed for irrigation, and bio-fuels will be made from agricultural wastes. The article says that China's rapid development has led to a turn towards eco-friendly urban design. This project may be the start of an integration of urban agriculture into the urban planning process. This is a step that is certainly needed. Being a city started on an undeveloped island, the project on Dongtan outside of Shanghai, its lessons will not be transportable everywhere, but this could be the site of another unique experiment in urban agriculture, as Cuba has been.

Newspaper articles relevant to urban agriculture reviewed below are:

Davey, Monica, "A Garden Flourishes Amid Chicago's Projects." August 25th, 2003 New York Times.
<http://www.nytimes.com/2003/08/25/national/25GARD.html>

Itano, Nicole. "Tending to Tradition." A - 1, 4. in the 17 July, 2000 edition of The Times-Picayune. N.O., LA

Toothraker, Christopher. "Farming Brought to the City in Venezuela." Associated Press story E 17 in The Living Section, Sunday, April 27, 2003 Times-Picayune.

Higgins, Adrian. Washington Post article "Let Your Garden Grow – on Top of Your House." Printed E 10 in The Homes and Gardens section September 26, 2003 Times-Picayune.

Swartz, Sidney. "Green Pastures for Urban Rooftops." The Columbia News Service printed on E13 in the April 3, 2005 Living Section of The Times-Picayune. N.O., LA

Beyer, Sylvia. "Student's Garden Teaches many Lessons," 27 January 2000 Midtown Picayune section of the Times-Picayune, N.O., LA

King, Ronette. "FARMERS MARKETing." 11 July 2004 article: F 7 of The Money Section, The Sunday Times-Picayune. N.O., LA

Hayasaki, Erika. "Seeds of Dissension Linger." LA Times October 31, 2005. <http://www.latimes.com/news/local/la-me-garden31oct31,1,7435458.story>

Newspaper articles about urban agriculture are for the most part human-interest stories. The August 25th, 2003 New York Times had an article by Monica Davey titled, "A Garden Flourishes Amid Chicago's Projects." It tells the story of for-profit specialty vegetables grown on previously overgrown lots near housing projects, which are sold to up-scale Chicago restaurants. The selling point for the vegetables is their authentic natural taste, not the uniqueness of the garden plots.

<http://www.nytimes.com/2003/08/25/national/25GARD.html>

Sometimes newspaper articles led this researcher to relevant academic research. This was the case for a July 17, 2000 article in the Metro section of the Times-Picayune of New Orleans, LA. The story, by Nicole Itano, was about aging Vietnamese immigrants tending vast vegetable and herb gardens near the levees of Eastern New Orleans. An excellent description was given of the gardens, the farmers and their culture. A study by University of New Orleans researcher, Professor David Clawson, was mentioned which led this researcher to find his two academic papers that were reviewed above. These were very helpful as they introduced a whole new area of discussion on activity in urban agriculture in the field of Cultural Geography. The focus of the newspaper article was the decline in usage of the urban plots after decades of continuing use, due to the aging of the population and the disinterest of younger generations.

The Living Section of the Sunday, April 27, 2003 Times-Picayune carried an Associated Press story by Christopher Toothraker about urban farming in Caracas, Venezuela. The story ran six columns wide with four pictures and was the only article on page E-17. The project of Venezuelan President Hugo Chavez was described in adequate detail, as was the background of recession and urban poverty that led to its formation. The program had help from the U.N. Food and Agriculture Organization (FAO) and had the benefit of Cuban agriculture experts through the FAO. The program seemed to be reporting successes, but on two occasions in the article the author felt compelled to mention critics who argued that the effort was based on "projects that have failed in communist countries." In the second case Michael Shifter, an analyst at the Inter-American Dialogue in Washington was quoted: "...the project is well-intentioned but based on failed models in Cuba and other communist countries." Whether his analysis of urban agriculture successes is accurate or not, his incompetence at not knowing that Cuba has been socialist not a communist country undermines his expertise and brings up questions as to his motivation in trashing this program for the Venezuelan city poor. All of the on-site reporting in the article brings out positives of the program.

Two newspaper articles were found that presented the attributes of green roof systems. The Homes and Gardens section of the September 26, 2003 Times-Picayune, printed a Washington Post article by Adrian Higgins: "Let Your Garden Grow – on Top of Your House." Mostly focused on residential applications it toasts the benefits of cooling, rain run-off control, and esthetics of green roof systems. Some construction particulars are given and some history: "...in parts of Europe, 30 percent of new roofs are living roofs." A resident of a condo with such a roof was quoted as: "I think this is an example of how we can bring our dwellings back into the realm of the natural world." In some small way articles such as this broaden the public's knowledge of the concept of planned, purposeful growing in the city environment. Another green roof article ran in the April 3, 2005 Living Section of The Times-Picayune. It was from the Columbia News Service and written by Sydney Schwartz, six columns wide with two photographs of commercial green roofs. This more recent article focused on commercial buildings and large scale residential buildings rather than

single family residential. Examples from Brooklyn, Nashville, Utah, Seattle, Atlanta, Chicago and Portland were mentioned and the photos were of the green roofs on the City Halls of Chicago and Atlanta. Difficulties with insurance and contractors were mentioned, and the need for government incentives to keep research and trial projects going forward. These living-interest stories are presenting a marketable aspect of the green architecture movement, which is just beginning a period of increased influence in building design. This current interest in energy efficiency and softer urban esthetics may be a way for urban agriculture to work its way into the planning discussions of urban design programs.

Of the many community gardens that are part of the North American urban agriculture world, some receive attention as human-interest stories in the newspaper press. These serve to increase the public's awareness that nutritional produce can be grown in the city. The Times-Picayune printed such a story by Sylvia Beyer on January 27, of 2000 about local gardener Tracy Hamlin. Ms. Hamlin expanded a neighborhood cooperative garden situated at The Green Project into her children's elementary school, Ursuline Academy, in New Orleans LA. The students learned the processes of growing food and the resulting produce was donated to Ozanam Inn to help feed the homeless. Donated were hundreds of pounds of produce each year. The program also includes a butterfly-tagging project. This is the type of project that maintains the knowledge necessary for participation in personal farming. Press coverage of such programs increases the public awareness of the value of this knowledge.

Another part of the urban food process that receives frequent newspaper coverage is the activities of farmers or community markets. The articles occur periodically in all major market newspapers. An example of this coverage would be a July 11, 2004 article in the Money section of the Sunday Times-Picayune by business writer Ronette King. Where there is small-scale production-for-profit growing, the farmers market is a key ingredient in getting a financial return for the grower's efforts. This article is a business, human interest and promotional vehicle. The variety of produce, services and participants are reviewed and

presented as alternatives to large-scale grocery produce-supply for individuals, and specialty restaurants.

All of the types of newspaper coverage presented above are an indication that some forms of growing in the city have achieved a certain level of respectability in the public eye. Press coverage in other parts of the world may or may not be so supportive depending on local governmental support and acceptance of the activities. Books, magazines and newspaper stories, although not academic research, serve important functions in the understanding of urban agriculture activities, since the study of these activities has not yet coalesced into a defined academic discipline. Bits and pieces of these activities are being defined, documented and promoted by the amateur participants in them and the societal observers of those individual activities.

Sometimes actions of urban farmers get coverage as news events. On October 31, 2005 LA Times staff writer Erika Hayasaki filed a story with the title "Seeds of Dissension Linger." It described protests that surrounded the return of 14 acres in South Los Angeles that have been the site of the South Central Community Garden, to its owner who plans to build a warehouse on it. Families involved in the garden plots have turned to civil disobedience in an effort to save the garden. The story introduces interesting issues of eminent domain, property rights, land-usage and community interests. Although it doesn't investigate or research these issues, the article does focus attention on them and the struggles that are often central to the success of an urban farming project.

Urban Agriculture and Urban Design

Works reviewed relevant to the dialogue between urban agriculture and urban design are:

Pinderhughes, Raquel. Alternative Urban Futures: Planning for Sustainable Development in Cities throughout the World. London: Rowman & Littlefield Publishers, Inc. 2004.

Viljoen, Andre. Continuous Productive Urban Landscapes: Designing Urban Agriculture for Sustainable Cities. Oxford: Architecture Press. 2005.

“Design for Food, landscape architects find roles in city farms.” June 2005 issue of Landscape Architecture, the Magazine of the American Society of Landscape Architects.

Despommier, Dr. Dirkson D., “Z-axis Urban Agriculture: the vertical farm project.” www.damninteresting.com

Quon, Soonya. : “Planning for Urban Agriculture: a Review of Tools and Strategies for Urban Planners,” *Cities Feeding People*. Report #28. Ottawa: International Development Research Centre. 2000. http://web.idrc.ca/en/ev-6549-201-1-DO_TOPIC.html

Drescher, Axel W. “Urban and Periurban Agriculture and Urban Planning.” Discussion Paper for FAO_ETC?RUAF electronic conference: “Urban and Periurban Agriculture on the Policy Agenda,” University of Freiburg, Germany. Aug. 21 – 30 Sept. 2000. <http://www.fao.org/urbanag/Paper3-e.doc>.

Van der Ryn, Sim, Stuart Cowen. *Ecological Design*. Washington, D.C.: Island Press. 1996.

Hough, Michael. *Cities and Natural Process: A Basis for Sustainability*. London: Routledge. 1995.

Works reviewed in this section in which urban agriculture does **not** appear:

Fainstein, Susan and Scott Campbell. Ed., *Readings in Urban Theory*, Oxford: Blackwell Publishers, Inc., 1996.

Saunders, William S., ed., *Urban Planning Today*, Minneapolis: University of Minnesota Press, c2006.

Powell, Kenneth, *City Transformed: Urban Architecture at the Beginning of the 21st Century*. New York: te Neus Publishing. 2000.

Gindroz. Ray., *The Urban Design Handbook: Techniques and Working Methods*. New York ; London : W.W. Norton, c2003.

Jacobs, Allen B., *Great Streets*, Cambridge, Mass.: MIT Press, c1993.

Duany, Andres, Elizabeth Plater-Zybic, Jeff Speck. *Suburban Nation: the Rise of Sprawl and the Decline of the American Dream*. New York: North Point Press. 2000.

In order for urban agriculture activities to be effective and successful long-term they must be acknowledged, accounted for and planned in by urban theorists and planning professionals. Spontaneous activities could continue without official support or even in conflict with regulations and planning theories, but urban agriculture will never reach its full potential if it remains an informal constellation of individual initiatives sprouting in the shade and cracks between showcase urban concrete monoliths and infrastructure. Urban agriculture must prove itself to be worthy of a respected place in the opinions and aesthetics of city designers and planners.

An outsider first approaching the subject of urban agriculture might think to look in the academic fields of Agriculture and Urban Design. They would be largely disappointed in these efforts. Almost all states have agriculture extension programs linked to state university campuses. Funding for research is often derived from the commercial agriculture industry. Over the decades the amount of research is remarkably vast, but it is not focused at, nor even can often be utilized by, participants in urban agriculture. Either the crop, the scale of production or the systems researched is inappropriate for city farming. The overall societal effects of small-scale farming are not crop related nor of commercial interest, so many of the motivating factors and community benefits of urban agriculture are not of interest to Agriculture Departments. It seems reasonable that over time some urban farmers have utilized the resources of Agriculture Departments for crop or production information, but the discipline of Agriculture is not a place where an understanding of the nature of urban agriculture can be determined.

Similarly, the discipline of Urban Design has had little interaction with the activities of urban agriculture. Urban design has two polar personalities of identity. On the creative end of the scale it is the aesthetics of Architecture written on a larger, citywide canvas. The solutions of these professionals for the city are marquee man-made landmarks and grand spatial inter-connections. This profession has evolved over time, but this is the urban design of boulevards and monuments, of attractive, (in the sense of being able to attract visitors and commerce) man-determined and built city-scale art. Urban architects and urban designers use

graphical standards to communicate their visions in their drawings of proposals. It may seem nonsensical to point it out, but there are no graphical standards for urban crops. Until there is a need, graphical standards won't be developed and urban agriculture won't be in the shorthand of landscaping elements available to the urban designer. At the other, more practical end of the scale, the profession of Urban Design involves planning; zoning and land-use questions, formulated and defined by zoning codes, planning boards and revitalization consultants. Approved uses of city land are zoned for economic benefit: proposals are conforming or non-conforming. The government, businesses and residents are investors in the prosperity of the city. Urban agriculture enthusiasts have made some progress impressing these professionals of the positive values of urban agriculture activities in a variety of global urban contexts, but there is by no means a consensus on the benefits of these activities in the profession.

Sometimes a subject is defined not only by where literature is found but also by in what literature on the subject it is **NOT** found. Three examples will follow, two from the planning profession of urban design and one from the architectural urban design profession. Readings in Urban Theory, edited by Susan Fainstein and Scott Campbell, 1996, is a relatively current and wide-ranging 400+ page compilation of proposals and thoughts on the nature of urban evolution largely defined by the title of the introduction essay: "Theories of Urban Development and their Implications for Policy and Planning." Fourteen author's views are presented and not one mentions any place for urban agriculture in any proposals or theories. The garden-city theories of Howard and Corbusier are used as a negative example in one essay titled "See You in Disneyland." The extensive index has no listings for agriculture, farming, gardens or even green space. These topics are neither on the radar screen nor solutions for urban theorists.

An even more recent work is Urban Planning Today; a 2005 publication of essays previously published in the Harvard Design Magazine and edited by William S. Saunders, an Assistant Dean at the Harvard Design School. The various and very qualified contributors work hard to propose analysis of and solutions to the urban ills perceived

to have evolved from "American cities' penchants for single-use zoning and free-market development in pursuit of economic growth..." Many new perceptions and angles of attack are proposed, perceived city success stories are dissected and new dynamics between the public and private development and governance are proposed. There are discussions of whether urban planning can enable good architecture and whether the goal of a "softer" people-friendly city like Portland is an appropriate goal everywhere. The possibility of curing the ills of cities designed to serve "the car" and the pitfalls of either too little or too much public input and control are debated. The concepts of "closed-loop" systems that would include urban agriculture in the feeding and greening of the city have not broken into this academic design club yet. Although the goals described in general terms seem totally compatible with the benefits of the activities in urban agriculture, this land-use possibility is not on the radar of any of these academic urban design contributors.

The aesthetic pole of Urban Design is about making a statement in or of the city in order to give it a personality or style, a face to the world. City farming is done by individuals, it is not pursued to impress anyone but to serve needs. Urban aesthetic design speaks in a scale that is, by definition, larger than the individual scale. The creative process that proposes architectural urban design schemes thinks in grand aesthetics, not of feeding people. On occasion, urban design addresses themes common with urban agriculture: community, neighborhood, home, security, green spaces and others, but it answers these questions with spatial relationships and aesthetics, not a tie to and respect for the land. Sometimes after a philosophy of urban design seems to fail, urbanists talk of its inability to make the city comfortable or to create human scale, but the succeeding school of design rarely incorporates the actual needs and activities of the citizenry, they just propose a differing professional public face for the city. Allowing room for subsistence, food security, gender equality, community land-sharing or even backyard gardens are rarely part of the face of this new design for a grand city.

An illustrative work where urban agriculture is **NOT** found in architectural urban design is City Transformed:

Urban Architecture at the Beginning of the 21st century, by Kenneth Powell. This is a compilation of urban proposals at the aesthetics end of Urban Design. The proposals presented are aimed at positively transforming parts of 25 cities spread across the globe. Although not acknowledged in the book, many are urban areas known to support vigorous urban agriculture activities: Ho Chi Minh City, Rotterdam, London, Hong Kong, Kuala Lumpur, Kobe, and Seattle, but integration of continued or expanded urban agriculture is not part of any of the proposals. The Introduction starts with: “The future of cities is the future of the earth.” It documents the growth of both the number and size of cities. The Introduction goes on to define the urban designer’s role:

“The new urban architecture is rooted in a great tradition in which the architect is the proper begetter not only of buildings but equally of urban form.” “The new urban architecture is not about appearances but about substance about a holistic interaction of aesthetics, politics, and finance.” “Change is endemic to city life – people come to the city to be free, get richer, achieve happiness. Not all succeed, but the pragmatic definition of the city of the 16th century philosopher, Giovanni Botero, still holds good: ‘a congregation drawn together to the end that they may thereby the better live at their ease in wealth and plenty’. The ideal city will never exist, ...Cities are more than collections of buildings and the spaces between them, but urban architecture forms the context to the way we live and determines our destinies. Architects are the makers of the cities of the future and civilization is literally in their hands.”

There are some people-friendly words here: holistic, happiness, substance over appearances, but it will be a long time before the proponents of urban agriculture can shoe-horn their activities into the visions of these urban designers. As mentioned above the graphical standards for urban crops do not exist. The preponderance of sketches, photos and graphics for these twenty-five urban “futures” contain almost no people whatsoever. Occasionally, a select few are posed for scale, but these are not visions able to contain the satisfied dirty fingers of city farmers. If they don’t want actual people cluttering up their visions, can you imagine the difficulties that they would have with crops?

The point of discussing these non-inclusive books, representative of many more in the literature of both urban theorists and aesthetic city visionaries, is to show how far the

practical everyday goals of urban agriculture: food independence, cultural continuity, individual self-sufficiency, diversity of flora, fauna and urban texture, are from the consideration of those who plan for the future of cities as either the designer’s of aesthetics, or as urban theorists whose proposals cleanly segregate activities and people by land usage, planning definitions and regional revitalization proposals.

It needs to be noted that counter to the traditional focus of urban planners, some authors have begun to look at the topic of sustainability in our urban centers. Following are the reviews of some works that begin the process of integrating the activities of urban agriculture into the urban planning community of professions. They are a preface to the next section on Shortcomings of Research on Urban Agriculture because the inability of urban agriculture advocates to place their activities into the infrastructure vocabulary of urban planners is a major hindrance to its evolution. These efforts have only started the task of lessening that shortcoming.

Alternate Urban Futures, Planning for Sustainable Development in Cities throughout the World, 2004, by Raquel Pinderhughes begins to look at this connection. Raquel Rivera Pinderhughes is a Professor of Urban Studies, San Francisco State University, San Francisco, CA whose courses were reviewed in academic curriculum reviewed above. A Preface in her book presents the sustainable outlook: “Urban planners and policymakers will have to promote land uses and land use policies principally developed to shape the urban environment in ecologically responsible ways and enhance the livability of human settlements.” This is followed by five chapters on areas of specific concern. They are: Urban water quality, supply and management, Urban solid waste disposal, collection and management, Urban energy supply and management, Urban transportation planning and management and Urban food production. Histories of both industrial agriculture (commercial-rural) and urban agriculture are given and the multiple benefits of urban agriculture are presented. Current practices and planning issues are given for Africa, Asia, Southeast Asia, Latin America, the Caribbean, Europe, Canada and the United States. In a summary on Alternate Urban Futures, she notes that: “In the area of urban food

systems, urban planners have paid almost no attention to urban food systems, planning for community needs, or to the role that urban agriculture can play in reducing socioeconomic and environmental problems in cities.” This is an important work from the academic interest in sustainable world and urban development. What is needed is a complimentary work to be written by an equally informed professional in the realm of urban planning who places these sustainable practices within contemporary planning goals and procedures.

The December 2005 issue of UA-Magazine contained an article by Andre Viljoen and Katrin Bohn, of the School of Architecture and Design, University of Brighton, UK, titled: “Continuous Productive Urban Landscapes; urban agriculture as an essential infrastructure.” The article is acknowledged to be written from a U.K. perspective and considers London as an expanding city for planning decision purposes. Time is spent delineating the advantages of urban agriculture with emphasis on the rising future costs of transportation and refrigeration as world oil reserves are depleted. An effort is made to find specific locations within an expanding city’s (London) infrastructure where urban agriculture could be situated with positive urban context benefits. It is encouraging to see urban agriculture as city infrastructure being proposed within the academic design profession, but inroads still need to be made into the active urban planning profession. Andre Viljoen has made a more thorough case for this inclusion in a book published in 2005, CPULs: continuous productive urban landscapes. It is a substantial work of 305 pages that is billed as the first book on urban agriculture for architects, landscape architects and urban designers. It is not from the traditional urban design profession but at least it is pointed at them and this is an important preliminary step. It proposes the inclusion of urban agriculture into the planning of an expanding developed European city such as London. The history of English open space is presented and the experience of Havana, Cuba is described as a laboratory for urban agriculture. Other international activities are described. The presentations concentrate on what urban agriculture might be in expanding developed cities. It would benefit from more investigation into activities that are on-going and thriving

globally, and how they might have influence in a planned urban context as a city moves from the lower end of the development scale into a more advanced level. This level is critical because it is there that urban agriculture is supplying the most crucial advantages in subsistence, income and food stability to the greatest numbers of disadvantaged people. This book seems to overemphasize that the need to incorporate urban agriculture into urban design is based on the proposition that the age of cheap oil is over, but certainly it is asking many of the right questions about planning for the future urban context.

The June, 2005 issue of Landscape Architecture, the Magazine of the American Society of Landscape Architects, carried an article titled; “Design for Food, landscape architects find roles in city farms.” It draws attention to two projects, one in Toronto, Ontario and one in Rochester, New York. The point is to increase the occurrence and validity of using farming features as landscaping elements in the urban context. This is another angle from which agriculture can become part of the vocabulary of urban planners.

An interesting contributor to the proposals to include urban agriculture into the infrastructure of modern urban contexts comes from Dr. Dirkson D. Despommier, Professor of Environmental Health, at the Mailman School of Public Health, Columbia University, New York, NY. He is an infectious disease ecologist who has made a proposal for vertical farms in the city. The proposal was covered in the website, www.damninteresting.com under the title of “Z-axis Urban Agriculture: the vertical farm project.” Urban positives promoted are: the advantages of year-round production, no weather related failures, organic produce, freeing up of farmland for ecological restoration, methane generation, reduced use of fossil fuel, sustainable urban environments and putting abandoned urban properties into food production. We have been presented with most of these advantages before, but an interesting new one from Dr. Despommier, the infectious disease ecologist, is the reduction of the incidence of many infectious diseases that are acquired at the agricultural interface. Three more proposed advantages are worth mention: “We cannot go to the moon, Mars, or beyond, without first learning to farm

indoors on earth. Vertical farming may prove useful for integrating into refugee camps. VF could reduce the incidence of armed conflict over natural resources, such as water and land for agriculture.” This article and its interesting urban farming advocate certainly expand the possibilities of the vision of urban agriculture. Designing the structures that would actualize these proposals should certainly be appealing to the aesthetically inclined urban designers.

Two papers from 1999 and 2000 discussing the links between urban agriculture and urban planning deserve mention. The first is Report 28 of the Cities Feeding People Series of the IDRC (International Development Research Centre,) titled: “Planning for Urban Agriculture: a review of tools and strategies for Urban Planners,” by Soonya Quon. This is a substantive 70+ page report that as a start to its research, surveyed urban planning professionals to ascertain the constraints to urban agriculture posed by the planning policy context. The second is the “Urban and Periurban Agriculture and Urban Planning,” discussion paper for the FAO-ETC/RUAF electronic conference “Urban and Periurban Agriculture on the Policy Agenda,” by Axel W. Drescher, University of Freiburg, Germany.

In the section above, Where and What is Farmed, an article by Luc J. A. Mougeot, “Urban Agriculture: Definitions, Presence, Potentials and Risks,” was reviewed. It was noted to be a thorough overview and presentation of the precepts and perspectives of urban agriculture. Mougeot believes that most recent policy analysis of urban agriculture has come from agriculture circles with a noticeable lack of analysis from urban planning sectors. Mougeot feels that the interest of urban planning sectors is essential for integrating urban agriculture into the urban economic and ecological systems. He mentions the 1999 Report 28 of the Cities Feeding People Series, “Planning for Urban Agriculture: A Review of Tools and Strategies for Urban Planners,” by Soonya Quon as an attempt to enable this integration.

Report 28 is a substantial report that attempts to define, identify and encourage urban agriculture in the urban planning process globally. It proposed to survey urban planning professionals in 63 candidate cities. Responses were received from 16 city representatives. There is a

conscientious effort to identify both the benefits and negatives of urban agriculture in the urban context. Furthermore the opportunities and limitations of including urban agriculture in planning goals are outlined. The issues of who are the decision makers and land accessibility and attainability are discussed. This is a comprehensive paper that tries to discover the reality of how planners are limited or have opportunities to include urban agriculture in land-use decisions. There is a creditable section on research needs which, if fulfilled, would help improve circumstances for urban agriculture. The needs identified are compatible with those identified by this researcher. The cities whose professionals responded to the surveys were decidedly developing nation sites with the exceptions of Stockholm and Toronto. Some North American and European cities were on the list but did not respond. They may not have had planners who felt familiar enough with urban agriculture to respond. The list of 63 cities that were proposed for surveys would be a good place to start in identifying 100 cities in need of baseline documentation and analysis.

The September 2000 work by Axel Drescher is not nearly as comprehensive as CFPS Report 28 but it does discuss in general terms the issues that are involved in including urban agriculture in urban planning. There is a brief presentation of general urban planning concepts and how urban agriculture can contribute to those goals. Availability of, access to and usability of land are identified as crucial issues. From an urban agriculture perspective it is proposed how these activities can fit into the overall goals of urban planners.

Both of these works are notable exceptions linking urban agriculture to the urban planning profession and they are both from the perspective of urban agriculture advocates. What is needed is for urban planning professionals to define where and how urban agriculture can positively fit into the palette of their land-use proposals.

Where urban agriculture has been proposed for urban design is not in the activities of individual stakeholders but in large-scale green-space infrastructure. This was noted in the CPUL book and article by Andre Viljoen reviewed above. It maybe that urban agriculture will find acceptability in the vocabulary of urban designers in these larger grand

infrastructure statements and then eventually work its way down to acceptability and planning validation at the individual stakeholder level.

In the developed world the integration of urban agriculture and urban design and planning would also be a significant advancement after the current lack of recognition in these professions. Briefly, some other examples of where urban agriculture is not found will be discussed. In Ray Gindroz's 2003 work, The Urban Design Handbook: Techniques and Working Methods, the index has no listing for agriculture or farming, whereas there are notations for porch design. Great Streets, by Allen B. Jacobs in 1993 has no index citations for farming or agriculture, but 50 page listings for trees and 10 on benches.

Andres Duany, Elizabeth Plater-Zybic and Jeff Speck published in 2000 Suburban Nation: the Rise of Sprawl and the Decline of the American Dream. They have contributed to many commercially successful town-building projects. In this work there is one page citation for the preservation of farming land and one on the urban / farming transition, but there is also one on White flight and 5 for the general subject of trees. Although their designs propose more human scale in designing towns, the realities and enjoyment of food production are not designed into those new visions at any scale. The Regionalism and new Urbanism movements are supportive of porches and Main Streets but they need to also realize that up until the City Beautiful movements and the economic dominance of large-scale agriculture, the human-scale clusters they are trying to emulate were largely food-producing independent.

There has been an effort to insert a more ecologically sensitive attitude into the planning and building of cities. It is a larger-scale expression of the green architecture movement focused on putting more sustainable and energy-use conscientious technologies into the built environment. Writers in the ecological design movement include Ian McHarg, who published Design with Nature, in 1969, and continues through Peter Calthorpe, Rutherford Platt and Nancy Jack and John Todd, whose: From Eco-cities to Living Machines was published in 1994. This research will review Ecological Design, by Sim Van de Ryn and Stuart

Cowen in 1996 as it incorporates and supports many of the ideals of the earlier writers. The authors start with discussions of sustainability and design and an introduction to the principles of ecological design. "We need to acquire the skills to effectively interweave human and natural design." It is refreshing to see an attitude that we don't already know and have the technology to do whatever we want in our cities. They ask us to look at *full* environmental impacts of design. After an introduction and history of ecological design the guidelines for a new design process are outlined. Five principles are outlined: 1. Solutions from Place; 2. Ecological Accounting Informs Design; 3. Design with Nature; 4. Everyone is a Designer; and 5. Make Nature Visible. Urban agriculture is never specifically discussed, but this is the urban design articulation with which city farming proponents need to align themselves. Unfortunately these authors use examples that are mostly at the single building or small building site scale. Proposals for modifications and proposals at larger land-use and zoning scale are lacking beyond the philosophical discussions.

New and newly re-discovered advantages of urban agriculture programs of varying scales need to be drawn back into healthy sustainable town designs. The fact that urban agriculture is not on the radar of urban designers and planners must change through education and infiltration. Eventually graphical standards and planning criteria for various elements and scales of projects in urban agriculture will need to be developed so that these activities can be drawn into the plans of evolving sustainable cities.

A notable recent exception to the lack of integration between urban theory and ecological concern in general and urban agriculture, in specific, is a 1995 work by Michael Hough, Cities and Natural Process: a Basis for Sustainability. Hough makes a case that past urban theory has acted in conflict with nature. Hough is a landscape architect and professor in the interdisciplinary environmental studies program at York University. He analyzes six elements found in the urban context: water, plants, wildlife, habitat, city farming and climate; and reviews them both as natural processes and urban processes. A thorough case is made for an environmental view when approaching urban design. It is thought that the existing natural context should dictate design

decisions in contraction to the current process of nature being selectively placed around urban design projects. Natural processes, not Utopian ideals should be determinant in town planning. Aesthetic and cultural considerations should not be allowed to trump environmental effects of the urban fabric. His proposal for detention ponds as urban landscaping elements is particularly resonant in today's New Orleans rebuilding scenarios. The weakness of this work is that he does not extend his urban design theories to the subsistence activities and cultural traditions of other economies and continents. In the over ten years since this publication very few urban designers have fallen in step with Michael Hough. The green architecture movement is sympathetic, but concrete projects on the city-scale need to be supported.

The urban theorists mentioned in the course of this research and other prominent designers, need to be invited to participate in the types of design competitions and seminars proposed earlier. This will be proposed in more depth in the chapter below on shortcomings in research. The current and on-going rebuilding of the urban fabric of New Orleans would be an appropriate project for inserting urban agriculture on various scales into design proposals. Select competition proposals by design professionals could then be funded into actualization. In this way, urban agriculture will infiltrate the inventory of urban designers and planners. Unfortunately, the future will probably hold other urban catastrophes and the lessons learned from these initial efforts could be passed forward in response to future disasters.

Shortcomings of Research on Urban Agriculture

Works reviewed relevant to the shortcomings of research in urban agriculture are:

Hutchins, Steven L., Urban Agriculture: a source book: with reference bibliography, organizational listings and additional bibliographies. Planning Department at the University of Maryland, College Park. DE. 1994.

Garber, Steven D. The Urban Naturalist. New York: John Wiley & sons, Inc. 1987.

Weiss, Gaea and Shandor. Growing and Using the Healing Herbs. Emmaus, PA: Rodale Press. 1985.

Spirn, Anne Whiston. The Granite Garden: Urban Nature and Human Design. New York: Best Books Inc., 1984.

Rybczynski, Witold. City Life: Urban Expectations in a New World. New York: Scribner. 1995.

Mintz, Sidney W., Tasting Food, Tasting Freedom: Exercises into Eating, Culture and the Past. Boston: Beacon Press. 1996.

Morse, Richard M., "The Claims of Tradition in Urban Latin America." Contemporary Cultures and Societies of Latin America. Heath, Dwight B., (ed.) New York: Random House. 1974.

Hardoy, Jorge E., "European Urban Forms in the Fifteenth to Seventeenth Centuries and Their Utilization in Latin America." Urbanization in the Americas from its Beginning to the Present. Schredel, Richard p., Jorge E. Hardoy. (eds.) The Hague: Mouton. 1978.

Roberts, J. Timmons. "Squatters and Urban Growth in Amazonia." Geographical Review. Vol. 82 No. 4 October 1992.

In addition to urban agriculture being largely ignored by the urban design and planning professions, there are two overall shortcomings of research in urban agriculture. The first is that there is no academic institutional "home" for the subject. Academic documentation has been applied after the fact, to activities of initial participants who were decidedly non-academic. The body of knowledge in the field is not the result of a historic continuity of academic research, as in some fields: Sociology, Botany, Anthropology or Biology. These are related fields whose body of knowledge largely grew out of academic research and documentation in an orderly, progressing fashion. Urban agriculture has become the subject of some academic interest, but it is largely after-the-fact documentation of local participants who were decidedly amateur and non-academic. This first general shortcoming, no academic home, which is mainly an organizational and promotional hindrance, is possibly either an outgrowth or a cause of the second general shortcoming.

The second general area of shortcoming in the research is a lack of organized baseline documentation and definitions of urban agriculture themes across geographic regions. This is due to the nature of the evolution of urban agriculture

activities. The evolution was characterized by tradition, necessity, adaptation, and differing cultural responses in varying specific environs. Agriculture itself varies greatly with climate, topography and soil resources. This variety is compounded by the diversity of the participants, cultures and urban contexts. The activities have drawn interest to many of the specific unique loci and excellent documentation has occurred, but this documentation, for the most part, has not stepped back and found the commonalities and differences of urban agriculture activities across the global contexts where it is practiced. This current shortcoming echoes the opinion Susanne Freidberg in the 1992 issue of Hunger Notes that was reviewed above. Her article, "Research Review: Bibliography," concluded that: "recent research on urban agriculture is distributed very unevenly. We find numerous studies from southern and eastern Africa and East Asia but only scattered references from Latin America or other parts of Africa and Asia." "The current state of research... points...to the need for further research. There is a great need for baseline, comparable, data from all parts of the world." To a large degree, even after many more individual situations have been documented and urban agriculture has become much more widely understood and appreciated; this need still exists in 2006.

Both of these shortcomings, an academic home for urban agriculture and the need for comparable, baseline data from varying environs globally, will be discussed. In addition to these shortcomings in the research on urban agriculture, this section will review some works that begin to meliorate these shortcomings and will make proposals for progress in both research and the promotion of urban agriculture.

In 1994, Steven L. Hutchins, a graduate student in the Planning Department at the University of Maryland, College Park, compiled Urban Agriculture: a source book: with reference bibliography, organizational listings and additional bibliographies. Mr. Hutchins organized the research he found into 10 categories. They are listed with the number of entries in each in parentheses: How to do (21), History (21), International (33), Academic (74), Thesis (27), Organizations (51), Newsletters (8), Conferences (20), Bibliographies (18), and Periodicals/Articles (62). The entries are brief, title and date only or title and address. There is a brief "Introduction

to Urban Agriculture," which is slanted towards activities in the United States. The organizational format is one of publication type not activity characteristics. It would be interesting to see the sources grouped by some characteristic of crop, participant, scale or official designation. There are over 360 sources listed and although updating for sources from the last twelve years would be helpful, this source book can be very helpful in locating specific authors and titles. It is reviewed in this section because, although informative, it is an example of how research to date has not been conceived of as documenting a unified subject, but instead individual actualizations of that activity.

The value of baseline global documentation is understood by looking at some of the better specific research documentation that was obtained for review such as that of Daniel Maxwell in Africa, Ali and Porciuncula in Asia, Airriess and Clawson in New Orleans and Moskow in Cuba. In review it can be realized how invaluable it would be in making the case for urban agriculture to city planners, to have this depth of analysis and the comparisons that are then possible between them, available from more known instances of the activity. Daniel Maxwell's work on urban agriculture in Kampala, Uganda, which was reviewed in the section on African literature, is an example of the type of extensive and thorough case study analysis that is needed across more global situations. The same standards of research and documentation need to be applied in developed and developing contexts. In this way commonalities and differences of goals and activities can be explored. This would begin to form the baseline of information that is lacking in the field. Maxwell covers land access and tenure, theory and policy, food security and nutrition, and documents the crops farmed. He also investigates household engagement, income and division of labor and the state response to the activity. If Maxwell's format for analysis of: who, what, where and why were replicated across the world's 100 largest urban centers, (or a selected representative 100 cities) a large step forward would be taken in unifying the discussion of urban agriculture. Research could begin to be carried out on analysis of this baseline data across geographic, economic, social and political variances. Positives could be identified for exportation to possibly appropriate similar situations and negatives could be

identified and adjusted in new locations. The planning community could be approached with a systemized presentation of the needs, activities and benefits of urban agriculture that have been analyzed across urban contexts. What is appropriate and desired for individual cities could be encouraged and approved.

The work The Urban Naturalist, by Steven D. Garber is worthy of mention at this point for two reasons. The first reason is that although it would never turn up in any journal or Internet searches and the phrase urban agriculture never appears in the book, it contains information relevant to the analysis of research on the subject. Urban agriculture generally concerns activities planned or initiated by human culture, but also incidental or spontaneous natural activities are harvested and utilized in urban environments. In surveying the natural assets of urban environments, Steven Garber has catalogued an extensive natural inventory that includes some species of plants and animals put to the nutritional use of urban societies. At no point does Mr. Garber think that he is cataloguing urban food products, but he describes the uses of many plants and the occurrence of many animals known to be utilized. Among the species catalogued that might be utilized by urban dwellers are edible grasses, plantains, fruit trees, fish, honeybees, reptiles (turtles), birds (southeast Asian Swift bird nests), and various small mammals. Mr. Garber is an unaware contributor to the literature on urban agriculture.

The second reason that this work deserves review is that its cataloguing of urban naturalism is an example of the type of documentation that needs to be carried out across a variety of global urban contexts focused on urban agriculture species. This type of species by species documentation of activities found in specific urban contexts would begin to supply the baseline of information that has been noted as lacking in the field. Surveys and research concerning the cultural, societal and geographic information concerning each urban context could be added to the species catalogues and research could be compared across the variations that are found.

Similarly, Growing and Using the Healing Herbs, by Gaea and Shandor Weiss, is an unknown contributor to the library of urban agriculture. This book contains a

comprehensive history of healing gardens and herbal medicine. The tradition of this activity is presented as a long-lasting historical activity and across various cultures globally. After 60 pages of fascinating background in medicinal herbs there are 200 plus pages of the healing and growing characteristics of specific herbs. There are then over forty pages of general suggestions for establishing herbal gardens and approximately thirty-five pages devoted to the preparation and use of the herbal harvest. It is a substantive reference work that is representative of many other books on the cultivation of medicinal plants suited for small-scale propagation. Medicinal plants give the participants options of independence from institutional medical practice. As does other aspects of urban agriculture, it preserves important traditional knowledge, has positive health benefits and can produce family income. Although medicinal plants are mentioned in the UNDP report, this is an area that needs focused research across regions and varying demographics of current participants. Compilation of successful activities could have tremendous benefits in both developing and developed contexts for achieving health independence. This is an aspect of urban agriculture where future attention could truly be a significant *two-way street* of benefits, as researchers investigate and archive important indigenous and cultural local knowledge for broader propagation globally and local participants receive information enabling more efficient growth, harvesting, utilization and possible marketing of their known herbs and new species. This is a wonderful book that every documenter of specific and regional aspects of urban agriculture should carry with them so that instances of herbal growth and care can be recognized and recorded as practical and powerful actualizations of urban agriculture.

Another substantial work that straddles the line between being relevant to research on urban agriculture and being merely of tangential interest is The Granite Garden: Urban Nature and Human Design by Anne Whiston Spirn. Like The Urban Naturalist, this book catalogues extensively the natural ecological items found in urban contexts, but it also addresses how they should be considered, cared for and used by urban designers and planners. Cultivation of food produces is never discussed directly, and the term urban agriculture is not used, but every topic of discussion would be of interest to those involved in urban agriculture. The

extensive bibliography is divided into 8 sections each with an introduction. In total they encompass 24 pages of 8-font cataloguing of sources on the following sub-topics: The Background: History and Theory, General Sources on Nature in the City, Urban Air, Urban Land, Urban Water, Urban Vegetation, Urban Wildlife, and Urban Ecosystems. The focus of this work is another opportunity to forge a bridge between urban agriculture and urban design. Especially supportive to the cause of urban agriculture are her suggestions as an urban designer that every city should have a plan based on the city's geological and ecological resources. "Every new building, street, and park within the city should be designed to prevent or mitigate hazards and to conserve and restore resources."

Although it is not mentioned specifically, it is easy to see how well the goals of urban agriculture fit into this approach to urban design and planning. What is regrettable is that professionals in urban landscape, ecology, and design are not including urban agriculture into their catalogues of urban assets. It is as though farming is the invisible ecology of our cities. This oversight by the professionals of urban activities has been a major hindrance to the implementation and success of urban agriculture in many urban contexts.

The research suggestion is to look at 100 representative urban centers around the globe in various climatic, cultural and geographic situations and determine those cities where specific documentation of activities has not adequately occurred. A format similar to that of the best past researchers would be applied. Funding for research needs to be sought with attention to baseline documentation of local urban agriculture activities, species and characteristics and urban ecological resources. Particular attention would be paid to the naturally occurring and cultivated urban plant and animal products and to the herbal production of the local culture and related local medicinal knowledge as these have been largely overlooked by past documentation.

The next level of documentation would involve the identification of additional individual urban contexts beyond the initial 100 that are lacking in research and documentation of current formal and informal activities. Ongoing analysis of the relationship of any specific city's urban production,

environmental and geographical features, and cultural and societal characteristics that followed would be able to be compared to the results of this broader baseline documentation. What is potentially transportable in urban agriculture successes could be identified and the nature of hindrances and restrictions more broadly understood.

It is suggested that the academic home for this renewed round of documentation and research would be the area of Cultural Geography. This academic base is related to or could be an umbrella discipline for much of the research that has already occurred. It also is a centrally located academic discipline between social and physical sciences from which much of the inter-disciplinary research that will be needed to move forward in urban agriculture understanding and promotion could be enabled.

There are those who believe that North American cities represent a step in the evolution of urban contexts. If there is some truth in this, then a 1995 work, City Life: Urban Expectations in a New World, by Witold Rybczynski, becomes an unknowing contributor to the literature of urban agriculture. He proposes that New World urban centers evolved differently than those of the Old World. Without using the term urban agriculture, he documents trends that are important to the history of urban agriculture in North America. Unlike the walled or strategic positioning and form of European cities, new world (primarily North American) cities expressed the independence and tolerance of the spirit of the transplanted citizenry. "The American idea that cities could be made almost entirely of freestanding private houses with their own gardens was an original notion, at least in Western Cultures."(p.83) A footnote adds that there was a tradition in African, Chinese and Japanese cities of individual houses with agriculture plots. Individual home plots are seen as an evolution from the European model and these household city gardens were part of the independence they expressed. Rybczynski proposes this was the case from the start of colonial cities until the late 1800's and early 1900's when the influence of Chicago's Columbian Exposition of 1893 initiated the next change of attitude. "...the very people who had prospered in the American cities now felt that rough-and-ready planning no longer suited their increasingly genteel way of life. Movers and shakers

acquired a taste for the planned avenues and squares of London, Paris and Rome.”(p.131) One can surmise one part of the “rough-and-ready,” independent, planning that was suddenly not genteel enough were the food-security supplying city gardens. The city began a movement away from independence (closed-loop) and into a *prettier*, dependence on rural agriculture that supplied the food needs of the inhabitants of the next step in urban design: the City Beautiful Movement of Howard and others. Rybczynski’s City Life is mentioned here because it supplies important background in the history of urban agriculture in North America and of a link between (the disappearance of) urban agriculture and urban planning. By understanding how urban agriculture was planned out of our cities to serve certain contemporary ideals, a better understanding can be reached of how urban agriculture can be planned back into the urban context to serve new needs.

The reason that a number of authors; the Weises, Garber, Spirn, and Rybczynski; have been reviewed in the section on shortcomings in the research into urban agriculture, is because in addition to their contributions to the library of knowledge, they each represent areas where not nearly enough attention has been focused. Another such work is Tasting Food, Tasting Freedom: Excursions into eating, culture, and the past, by Sidney W. Mintz. In a work that ranges across many interesting aspects of food and culture, he makes the point in Chapter 3 that the small-scale plantation-house vegetable gardens of the Caribbean plantation system were incubators of freedom for the slaves. The gardens that produced the food eaten on the plantation, both by slaves and free people, were gradually given into the control of the slaves themselves. These small-plots, distinct from the plantation crops, gave the slaves partial control of their own and to some degree their owner’s lives. This is not a work on urban agriculture, but it supplies information relevant to its study and points directly to a subject in need of further research from an urban agriculture perspective. The partial food-security independence supplied to urban agriculture participants at the subsistence level has been noted globally. Studying the historical contribution of small-plot farming to the movement from slavery to freedom could be beneficial to others in suppressed social situations.

There is a significant body of research in the discipline of Sociology into the history and characteristics of the urbanization process. Much of it comes tantalizingly close to including city farming in the analysis. At a minimum the accumulated efforts of this social science are a resource where an understanding of the development and evolution of the urban contexts in which urban agriculture does or might exist. Three representative papers relevant to the investigation of the urbanization process in Latin America will be briefly mentioned.

Richard M. Morse in his 1974 paper: “The Claims of Tradition in Urban America,” presents a number of themes relevant to the development and success of urban agriculture in Latin America. The differences between the urban traditions of Ibero- and Anglo-America are proposed. Amongst other facets, the role of the agrarian domain and the persistence of traditional features differently in the Southern than the Northern Hemisphere is analyzed. Without mentioning urban agriculture, Prof. Morse surmises that the incongruous maintenance of traditions in the face of Modernism may serve Latin America by keeping alive options not allowed by North American modernity that may be needed in the future for urban survival.

Similarly, Jorge E. Hardoy, in his paper, “European Urban Forms in the Fifteenth to Seventeenth Centuries and their Utilization in Latin America,” analyses the differences in town planning theory in Italy, Spain, Portugal and Holland in the centuries before colonization. The influences of these theories in the towns formed during colonization are noted. This type of academic research is essential to understand the contexts in which urban agriculture finds itself evolving many centuries later and why it is different than activities in other regions.

The third example of Sociological work that will be helpful to the understanding of the practices of urban agriculture, in Latin America in particular, is “Squatters and Urban Growth in Amazonia,” by J. Timmons Roberts. This is a case study of the urbanization process of Paraupebas, in the Amazonia of Brazil. It studies the new phenomena of rapid urbanization of a remote area of a developing economy

to enable resource extraction. Prof. Timmons explores many social features of the growth of this boomtown and the consequences to the end urban form and its inhabitants. A parallel study of the food production and supply of this new form of urbanization process would be beneficial to understanding of the integration of urban agriculture into evolving urban contexts. This type of parallel urban agriculture research would be enabled by the proposed new home in Cultural Geography.

With the proposed home in Cultural Geography, urban agriculture research can be linked to the strong urbanization studies of Sociology and other disciplines through a crossover of academic interests and inter-disciplinary case studies. The types of research reviewed above, and others of which they are representative, could be easily modified to include food production, supply and activities in the urbanization process. This would greatly add to the body of knowledge available to make the case for urban agriculture to the urban design and planning profession.

At its current *outsider* status urban agriculture would always be an attractiveness-challenged stepchild in the disciplines of Urban Design or Planning. In order to gain independent standing and validation, this researcher's suggestion has been to create an active consolidated home in the academic disciple of Cultural Geography. This is the academic base from which Dr. Davis L. Clawson worked in documenting the Vietnamese garden communities of New Orleans. Cultural Geography would be a compatible current academic department and one that can be an umbrella that would include many of the above noted university programs where urban agriculture courses are taught, Environmental Studies, Natural Systems Restoration, and Food Security Studies. In its broader concepts, urban design falls under the analysis of Cultural Geography. It also has a history of case-study research across varying political, social, and geographic locales that will be beneficial in carrying out the extensive baseline documentation that has been noted as being lacking globally.

It is also suggested that urban agriculture advocates actively infiltrate most traditional architecture and urban design schools. The future designers and planners of cities

need to be exposed to the potentials and benefits of urban agriculture from the stakeholder scale to the visionary Vertical Farm first steps to Mars. The Harvard University Graduate School of Design should never again be able to publish a volume by its most prestigious contributors "addressing urgent contemporary issues in design and the built environment," without one or many of those contributors knowing the benefits and alternatives of urban agriculture. How does one infiltrate a traditional design school? One offers and sponsors platforms, colloquies, and competitions whose requirements include integrating some urban agriculture features into specific urban contexts. The results of these course level initiatives can be reviewed and culled and appropriate design solutions sponsored into actualization. The Harvard University Graduate School of Design is being selected out because its work Urban Planning Today was reviewed here. The other authors of works **not** including urban agriculture need to be invited into the platforms and competitions also. This process needs to take place in every major design school in the U.S.A. and internationally. The results of this seminar, course work and competitions and the follow-up sponsored urban actualizations could be compiled by urban agriculture advocates and shared with active designers and planning professionals at national and international conventions and continuing education opportunities. Speakers visiting design schools can be helpful, but integration will occur when urban agriculture becomes a design element in urban planning through practice in seminars and competitions. This process will foster the development of graphical standards for urban farming elements.

The Particular Case of Latin America

Additional works reviewed in this focus on Latin America are:

"Urban Agriculture in 21st Century Cities," workshop that produced the "Declaration of Quito" April 16-20 2000. Quito, Ecuador.

Drescher, Axel W., in his paper: "Urban and Periurban Agriculture and Urban Planning." Quoted report by Marielle Dubbeling from the Discussion Paper for FAO_ETC?RUAF electronic conference: "Urban and Periurban Agriculture on the Policy Agenda," University

This research is under the auspices of the Stone Center for Latin American Studies at Tulane University in New Orleans, LA, U.S.A. The initial questions about the what, where, who and why of urban agriculture grew out of graduate studies focused on urban issues in Latin America. Research has shown that urban agriculture is modified and differentiated in the various cultures and geographies where it grows. Activities across Latin America certainly reinforce this impression. Cuban activity is extensive on many levels of scale, is state supported and organized, and is utilized by an impressive proportion of the citizenry. Andre Viljoen, in CPULS: continuous productive urban landscapes, reviewed above, has a chapter, “Cuba: Laboratory for urban agriculture.” Author after author has focused on the successes of the Cuban experience; it has been comprehensively and deservedly documented. The Cuban experience cannot be ignored by anyone trying to integrate urban agriculture into the urban planning process. The continuing governing experiment that is Cuban Socialism and its arbitrary decision-making process must be acknowledged, but so must be the urban agriculture successes for the urban citizenry of Cuba. At the other end of the research spectrum, much of the informal activity in Latin America has not received the attention that similar activities have in Africa and other developing contexts.

In April of 2000, representatives of 28 cities of the Americas from 11 Latin American countries plus Ottawa, Canada and Rome, Italy, met in Quito, Ecuador, for a workshop: “Urban Agriculture in 21st Century Cities.” They issued the “Declaration of Quito.” It noted their cities’ problems of poverty, food security and environmental degradation. It noted urban agriculture experiences making progress in these areas and their sustainable nature. The positive goals of urban agriculture were encouraged and support was affirmed. Urban agriculture program contacts were given for each of the cities. Although 28 Latin American cities seems like a small percentage of those in the Western Hemisphere, the validation and support that this declaration affirms is a large step forward in the promotion of urban agriculture in Latin America and elsewhere.

The development of urban agriculture in Latin America has been different than other developing contexts because the history of agriculture and Latin American cities is different. Whereas parts of Asia have a continuing culture of urban agriculture and Africa has a tradition of small plot agriculture, the history of colonized, and to some extent, post-colonization Latin American agriculture was remote, large-scale rural acreage, overseen by urban administrators. Many Latin American cities are growing at a tremendous rate, but there is no history of food independence or food security. There is more contrast between the texture of rural subsistence activities and urban subsistence activities in Latin America than in Africa or Asia. Many urban agriculture programs have been planned and state or official support given, mirroring the “laboratory” work of Cuba, but much activity is informal and undocumented. The focused attention of researchers, such as Daniel Maxwell in Africa, for the most part, has not been turned on these informal activities in Latin America outside of Cuba.

The webpage <http://www.cityfarmer.org/sublatinamer.html#latinamerica> presents recent urban agriculture activities in Latin America. Disproportionately to its geographic size and political influence, Cuban activities are featured prominently. This is another indication of the respect these Cuban programs have among world urban agriculture proponents. Other hemispheric activities are covered in a random and less-than-in-depth fashion: “Mango City: Urban agriculture in Belem, Brazil,” “Tropical Agroforestry Homegardens in Nicaragua,” “Cultivating Community Knowledge: Growing food, flowers & Ethnobotanical gardens with street children in Brazil” and “Home-based Food Production in Urban Jamaica.” Although the workshop that produced the Declaration of Quito attempted to unify efforts in the field, activities are still seen as scattered and dispersed throughout the region. Individual programs may advise and support one another, but regional and governmental organization is needed to be more effective. In general, the research on urban agriculture, particularly on the informal sector, is not proportionate to the activities known to exist for food security and basic subsistence in the fast-growing dense urban contexts of Latin America.

In the UPA-Planning Summary Session 3 Week 1 of the Virtual Conference and Information Market Aug.21 – Sept. 30, 2000, titled “Urban & Periurban Agriculture in the Policy Agenda,” which produced the paper by Alex W. Drescher reviewed above, the following contribution to the general discussion of getting urban agriculture into the planning process was made:

“Marielle Dubbeling finally came up with a detailed list of steps to take to integrate UPA in city planning for the Latin American situation:

1. Describe the actors and the urban planning process, its objectives, strategies and policy instruments in for example 4 cities in the LAC region.
2. Construct in each of the cities a "urban territorial map", including a spatial classification of different (peri)urban land and water bodies and its uses: (Actors: Municipality + research institute).
3. Elaborate a classification and land use map of different urban and peri- urban spaces (using GIS)
4. Identify the characteristics of productive land use (production, transformation and commercialisation, type of production, temporal or permanent land use, access and land tenure).
5. Do an analysis of existing and future municipal planning ideas, norms and regulations for land and water use (land use plans, territorial plans, strategic plans). Actors: Municipality
6. Analyze and classify spaces where UPA could be converted into a sustainable and viable land use (compared to other forms of land use).
7. Do a participatory analysis of demands and ideas for land and water use. Actors: farmers, consumer groups, agro industry, market-cooperations, NGO and community based organizations.
8. Do an analysis of potential land and water use for agricultural production, processing and marketing

and its implications for urban planning: Actors: research, NGO and Municipality.

9. Reflect on the implications of a productive land and water use for urban planning.
10. Propose structures, mechanisms and practical instruments for a better incorporation of UA in urban planning.
11. Validate the results of the research with a group of 30 cities interested in the topic and working with UMP.” (Drescher)

These are good recommendations for the integration of urban agriculture into the urban planning process anywhere, but they are particularly needed in the Latin American context because of the noted scattered nature of official support and sponsorship of farming in Latin American cities. These steps should be part of the baseline research proposed above under the auspices of the discipline of Cultural Geography. Documentation of informal activities, trial programs and governmental cooperation have produced positive results and identified social barriers, but a road-map to integration such as that proposed by Ms. Dubbeling needs to be encouraged across the hemisphere in order to get urban agriculture into the urban planning vocabulary. This will allow the realization of the broad spectrum of social positives that can follow as has been seen in the urban agriculture laboratory that has been Cuba.

There are reasons to be hopeful for the progress of urban agriculture in Latin America. One of the most severe restrictions on these activities at the informal level is access to and continuing rights in cultivatable land. Unlike countries with strong and rigid concepts of property rights, parts of Latin America have been on the forefront of granting access and ownership of idle lands to individuals in need of subsistence production. Brazil has the mechanism for these programs written into its constitution and other countries have programs that accomplish the same goals. These programs were initiated to relieve the burden of dense urban contexts by opening up idle rural lands. Traditionally many lands had stayed in large tracts similar to the colonial ownership pattern. Much was not in production or held in

reserve for cattle grazing. The Brazilian programs, initiated in a response to pro-active Movimento Sem Terra activities, attempted to give ownership to people in need of subsistence plots. Although conceived as rural land programs, the mechanism is in place to take idle lands and give access and ownership to new producers. This has been an infrastructure barrier in many global locations of urban agriculture activities.

In summary, Cuba is still the crown jewel of urban activities in Latin America and globally. One newspaper article reviewed discussed how these programs are being exported to Venezuela. 28 cities sent government officials in charge of urban agriculture programs to the workshop that ratified the “Declaration of Quito.” Many state sponsored programs and much informal activity exists, but there is inconsistent documentation, analysis and review of these activities. Although documentation lags, there is substantial informal activity taking place in the fast-growing Latin American urban centers. Although undocumented and informal, substantial cultural knowledge of plants and animals, both for sustenance and medicinal uses, still exists in isolated urban and peri-urban pockets handed down from a heritage of societies that were much more in touch with local ecologies. These medicines, crops techniques and unique animal products are opportunities for independence. There is reason for hope that urban agriculture at various scales can become part of the planning processes that will make these large urban centers more sustainable in the future. In doing so urban agriculture will increase the intake of food, generate income and jobs for vulnerable urban populations, improve food security, offer alternatives to institutional medicines and benefit the urban environments of Latin America.

Summary

This research has attempted to identify the range and nature of literature concerned with the subject of urban agriculture. It looked first at the academic literature that could be located through journal and library searches. A representative selection was accessed and reviewed. In the course of research it was found that much documentation and literature exists outside of the academic disciplines. Books, conference and symposium papers, magazine and newspaper features were found that had focused on both the broad

nature of the phenomenon and individual activities that fall under the umbrella of urban agriculture. The evolution of the Web created both access to new resources and a new layer of organization of the traditional resources and these factors were explored. Academic curriculum where urban agriculture is presented was noted.

The nature of all of this literature, formal and informal, cannot be discussed without first discussing the nature of the activities that were being documented.

Activities were found to be nearly universal, not only geographically but also temporally, having a deep tradition across history. The motivations for the activities range from the desperate survival of squatters on fringe parcels of land, to the leisurely and contemplative commune with nature of private urban garden enclaves, to practical environment modifications like sod roofs, to visionary greening of future cities and all combination and continuum of the spectrum in between.

It is seen that the practices of urban agriculture has as many differing actualizations as the varying natural environs and cultural contexts in which it grows. If the nature of the activities is extremely diverse, then the quantity and quality of the research on the subject mirrors the subject. Susanne Freidberg’s 1992 observations were found to be still true for the most part, that: “recent research on urban agriculture is distributed very unevenly. We find numerous studies from southern and eastern Africa and East Asia but only scattered references from Latin America or other parts of Africa and Asia. The current state of research ...points...to the need for further research. There is a great need for baseline, comparable, data from all parts of the world.” The CityFarmer website has eased access to much of the available research and is a wonderful educational and organizational tool, but there is still a need for academic analysis to be focused more evenly and intensely on activities across the globe.

Studies in urban agriculture have been found in various curriculums. Researchers have been seen to come from many diverse fields. Their academic backgrounds have included food security, health, environmental issues, economics, development, sociology and urban planning

among others. This diversity has led to much wonderful production but also to the unevenness that was noted in the distribution of the research. It has been suggested above that research in urban agriculture would be enabled by finding a unified academic home under the discipline of Cultural Geography or another sympathetic discipline. Unifying the research and curriculum courses under one academic discipline would have three broad benefits.

A home in Cultural Geography, could give the oversight that would refocus, energize and fill in the gaps in current research. The body of literature would be peer reviewed for strengths and weaknesses and sponsorship could be sought to solidify its comprehensiveness. The baseline research that was recommended above could be funded and organized. One hundred, or some other representative number, of urban situations could be targeted, the activities documented in a fashion consistent with the better research work reviewed here, and simultaneously these sites could be analyzed for the potential to insert urban agriculture into each urban planning process.

Secondarily, currently research in urban agriculture is primarily organized regionally. A home in Cultural Geography would encourage it to be organized and analyzed in differing modes that transcend the regional such as agricultural features, demographics of income, gender, age or others, soil, crop or climate type, economic impacts, plot size or marketing features.

Thirdly, the comprehensive results of this new round of research could be used to supply the planning profession with information supportive of urban agriculture being an important element in the urban design process in a wide variety of urban contexts. An academic home in Cultural Geography or elsewhere, could sponsor the infiltration into urban design curriculums advocated above. The situations under which positive benefits accrue to the city could be documented and tactics and projects that are proven to meliorate perceived negative features made clear to the design and planning schools and professionals.

research in developing and developed contexts. Much of the past and current research perpetuates the First World concept that developing economies and societies are emulating and moving towards the current developed (often North American) model. The research on developing situations often assumes a position that these contexts are striving to evolve into developed cities, as we know them. The problems addressed in Urban Wilds makes apparent the limited nature of this ideal. Seen from their perspective, the goal of these developing cities is not necessarily to become the cities of North America or Europe. The aspects of social injustice that Urban Wilds addresses with the activities of urban agriculture are illustrative of how developing cities may not want to evolve. Similarly, concepts of social empowerment and land redistribution can be learned from the spontaneous activities of urban agriculture activists in developing countries and applied in more developed contexts. Urban agriculture lessons can be a two-way exchange in the evolution of both developed and developing cities into more viable and equitable societies.

The 2005 UNDP Human Development Report (HDR), which is based on 2003 statistics, shows that there are regional divides between developed and developing countries. The Low Human Development Index (HDI) countries, #'s 146-177, are predominately African. In the Middle HDI bracket, #'s 58 – 145, the lowest group is again African, then Southeast Asia, and towards the top of this bracket, Central and South American countries are mixed with Eastern European countries near the top. Those countries in the Hi HDI bracket, #'s 1 – 57, mix in some Caribbean and Central American at the low end, then Eastern Europe, Europe, the U.S.A. and Canada are mixed next with more Europe and the top ten are dominated by Scandinavian countries. An interesting demographic statistic given is the percent of the total population that is urban. For the lowest 31 HDI countries this percentage is between 20 – 40%, the Middle 87 HDI countries range between 30 – 60% and the 57 Hi HDI countries have an urban population of between 60 and 90+ percent of the total population, with most at the upper end of that range.⁷

Those areas where the desperation of poverty and food security is the most critical have the lowest percentage of the population in urban contexts. It can be assumed that they are much less removed from direct contact with farming skills and local knowledge of their implementation. The national responses to survival issues will understandably be focused on the majority of the population in rural situations, but conversely, the urban population, if given support, is less removed from an agricultural tradition than in developed societies, and has a high probability of success in intensive farming. Information, training and planning aid transferred from the global urban agriculture community has the potential, with governmental support, for impressive survival and societal impacts. These intensive farming techniques, after implementation and improvement in regional urban contexts, could then be exported to small rural stakeholders in each individual country.

The Middle HDI countries have urban population slightly above and below 50%. They are clustered in Africa, Southeast Asia, Central and South America and Eastern Europe. Climates and agricultural histories vary greatly. There are still desperate needs for food security but not with the critical needs of the lower African countries. With half of the population in urban contexts there could be a phenomenal impact made by progressive and supported urban agriculture programs. Literacy rates for this group are consistently below 60 % only for the last 20 countries, the top 30 are in the high 80%, with many of these upper Middle Index countries about 95% literate. These populations can take, understand and regionally modify a great range of information, training and techniques passed on from the global urban agriculture community. Government support could be in the form of broader citywide planning and program organization. There is the potential for unique, varying, regional actualizations of urban agriculture as it is modified for climatic, agrarian, cultural, economic and societal differences. With the problem of desperate food security largely resolved, urban agriculture can be used to help these urban contexts evolve into culturally diverse and viable urban engines for national growth and stability.

⁷ 2005 UNDP HDI Report, http://hdr.undp.org/reports/global/2005/pdf/HDR05_HDI.pdf

The top 57 Hi HDI countries almost all have literacy rates above 90% and urban populations in the 80 – 90+ percentiles. These are the venues where the process of integrating urban agriculture into the formal urban design and urban planning processes is most important to the majority of citizens of these contexts. These are also the venues where the concept of growing food in the city has been most thoroughly cleansed from the planning of a *modern city*. Governmental processes are the most stable and there is at least a declared objective of bringing healthy living conditions to the populations as a whole. If the overall and specific positives of urban agriculture can be documented on a variety of scales; personal, cooperative, community, private enterprise, etc.; then these activities can find their proper places in the land usage policies and urban design visions of large modern cities. The high developmental index of these nations has been largely based on an unsustainable economic model. It has degraded the environment, coerced resources from less powerful global regions and built success on the social injustice issues raised in Urban Wilds and by others in the Environmental Justice movement. Urban agriculture can be a powerful tool in modifying these *high development* nations into new success models based on local and overall sustainability and health.

The importance of the integration of urban agriculture into the urban planning process cannot be over emphasized. This is true in both developing and developed contexts. It has the potential to validate informal activities and allow them to make the transition into sanctioned programs. It also has the potential to change the nature of modern cities into closed-loop systems that will enable sustainable evolution in the future. Both urban design, with its aesthetic visions, and urban planning, with its land usage, zoning and social engineering must be made to understand the contributions that various options in urban agriculture can make to cities as they evolve. In cities at all levels of this evolution the integration of urban agriculture into urban design and planning is necessary both in order to enable individual and other informal activities and to foster the organization of sanctioned programs at larger scales of community, regional, state and private enterprise. In both the developed and developing world this future is far removed

from the current condition where the activities are still illegal in some African and South American locales.

In summary, this research has reviewed or cited over 80 works published from the late 1800's until September of 2006, relevant on some level to the subject of urban agriculture. It is acknowledged that a substantial quantity of existing documentation and research on the long-stranding traditions of Asian urban agriculture might not have been

been documented in this review of the available literature. Its forces for social change are truly impressive and act as an antidote to the various ills of urban evolution. It is impossible to envision an urban complex that is truly healthy for the entirety of its citizenry, from top to bottom, without the planned integration of urban agriculture on many levels.

Urban life is a societal or group activity. There are many potential negatives to dense social grouping but an important positive of group activity is the ability to support and tend for one another in the group. Urban agriculture tends (enables) the concept of a dense societal grouping (urban context) on a healthier level than is possible without it. It is the primary activity through which we can tend to the health of one another and to the health of the city itself. Urban agriculture enables a food supply for this group life, re-enforces the ability of the group to be independent, it softens the concrete context and involves opportunities for rest, relaxation, health, cooperation and leisure. Shelley Taylor's comment that follows on the instinct of humans to care for one another applies not only to our relationship to one another in group living but also it can be implied to represent the function of urban agriculture to tend to the health of the city as a group activity.

“As the insistence of day –to-day survival needs has subsided, the deeper significance of group life has assumed clarity. The cooperative tasks of hunting and warfare represent the least of what the social group can accomplish. Group living is intrinsically soothing and comforting. We enjoy not only a happier, but also a longer life in the company of other humans. The social groups that envelop us literally promote growth and regulate our stress systems. We are, of course, the source of one another's stress as well, but as will become evident, the biological environment that is fostered by close relationship permits us to flourish in good health and recover from poor health quickly.”
- The Tending Instinct

“Group living is intrinsically soothing and comforting.” How far many of our urban contexts have strayed from that observation. It is true of group living, but not of group living as our cities have evolved. It is imperative to put the realities and benefits of urban agriculture back into our massive social efforts in dense living (cities) in order to tend to both the individuals and to the cities themselves. The benefits that

Shelley Taylor proposes that grow from group life to its individuals are exactly those that urban agriculture bestows upon dense group living, the urban contexts themselves and their citizens.

Appendices

Appendix 1

Reproduction of Table of Contents of 1996 UNDP Report

Urban Agriculture: Food Jobs and Sustainable Cities

Contents

Part I: The Global Significance of Urban Agriculture

1 Cities that feed themselves

Myths and reality

Basic concepts

Urban agriculture and urban systems

 The urban nutrient cycle

 The urban food system

Structure of urban agriculture

 Preproduction

 Production

 Postproduction

Notes

2 Urban agriculture yesterday and today

A brief history of urban agriculture

Asia

Africa

Latin America

Europe and North America

 Europe

 North America

Summary: Comparisons across continents

Notes

Part II: What is Urban Agriculture?

3 Who are the urban farmers?

Low-income farmers

Middle- and high-income farmers

Domestic and international agribusinesses

Farmers and cooperatives

Special groups of farmers

 Women farmers

 Immigrant farmers

 Crisis farmers

Notes

4 Where is farming found in the city?

Types and spaces used

 Around the house

 Community spaces

 Surplus or reserve public and private spaces

 Roadsides and other rights-of-way

 Streamsides and floodplains

 Water bodies and wetlands

 Steep slopes

Duration of use

 Permanent use

 Long-term use

 Short-term use

Location within the metropolitan area

 Core

 Corridors

 Wedges

 Periphery

Access to land and tenure

Notes

5 Producing food and fuel in urban areas

Aquaculture

 Aquatic plants

 Fish and other seafood

Horticulture

 Container horticulture

 Soilless horticulture

Animal husbandry

 Poultry

 Small livestock

 Large livestock

Agroforestry

Other urban farming activity

 Fauna

 Flora

Notes

6 Which organizations influence urban agriculture?

Different roles for different organizations

Support organizations

Farmers associations

Non-governmental organizations

Government and public authorities

Local governments

National governments

Institutions

Institutional providers

Research institutes

Other stakeholders

Partnerships among organizations

Notes

Part III: Benefits, Problems and Constraints

7 The benefits of urban agriculture

Health, nutrition and food security

Social benefits

Economic benefits

Employment, income generation and enterprise development

The national agriculture sector and urban food supply

Economic use of land

Sustainable urbanization

Environmental enhancement

Efficient urban management

Waste management benefits

Conservation of resources

Disaster mitigation

Productive use of hazard-prone and sensitive areas

Mitigation of civil and economic crises

Notes

8 Problems related to urban agriculture

Health and hygiene problems

Crop cultivation in polluted city environments

Use of chemicals in urban farming

Use of domestic waste in urban farming

Rearing livestock in cities

Environmental problems

Other problems

Inefficient use of resources

Aesthetic impacts

Notes

9 Constraints on urban agriculture

Sociocultural biases and institutional constraints

The “modern” view of cities

“Traditional” sociocultural biases

Institutional constraints

Constraints on access to resources

Irrigation

Land and water surfaces

Constraints to access to inputs

Constraints to access to services

Credit

Other services

Special risks of urban farming

Postproduction constraints

Organizational constraints

Notes

Part IV: The Future of Urban Agriculture

10 Promoting urban agriculture through policy and action

Interventions within and across sectors

Increase public knowledge and support

Build political will

Improve organization and communication among farmers

Develop a policy framework and build institutional capacity

Expand research and training

Improve access to resources, inputs and services

Maximize health, nutrition and food security

Achieve sound environmental and urban management

Intervening at the most efficient level

Community-level actions

City-level actions

National-level actions

International-level actions

Notes

Appendices

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- CFP Report 39: Agricultura Urbana en America Latina y el Caribe: Impactos y Lecciones de la Segunda Generacion de Proyectos de Investigacion Luc J.A. Mougeot, Kristina Taboulchanas y Gonzalo La Cruz (2004) ITDG 2004
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- CFP Report 38: Wastewater Irrigation, Farmers' Perceptions Of Health Risks And Institutional Perspectives: A Case Study In Maili Saba, Nairobi (2004) Catherine W. Kilelu 2004
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CFP Report 37: Wastewater Use in Urban Agriculture: Assessing Current Research and Options for National and Local Governments (2004) Mark Redwood 2004
Explores the link between UA and wastewater use based on existing literature and evidence from IDRC-supported research in the Middle-East and North Africa region.
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Appendix 4

Copy of Research Survey Correspondence

Name of Recipient

Address

City, country

Dear Sir or Madam:

My name is Charles Lesher. I am currently pursuing a MA degree at Tulane University's Roger Thayer Stone Center of Latin American Studies. One of my courses this semester is an Independent Study on Urban Agriculture. One of the initiatives of this project is to compile a literary review of articles and other publications that fall under the heading of Urban Agriculture.

Your address was obtained as either a referral or as a result of initial research that indicated your work may fall into the scope of this project. Following this introduction is a list of works I am already familiar with, sorted by geographic region. My particular interest is Latin America.

Any literature, contacts, or other documents that you might be able to send or reference would be highly appreciated.

Sincerely,

Charles Lesher

2803 Jefferson Ave.
New Orleans, LA 70115
urbanagr@hotmail.com